FOUNDRY TRADE JOURNAL

EST. 1902

WITH WHICH IS INCORPORATED THE IRON AND STEEL TRADES JOURNAL

VOL. 108
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JUNE 9, 1960

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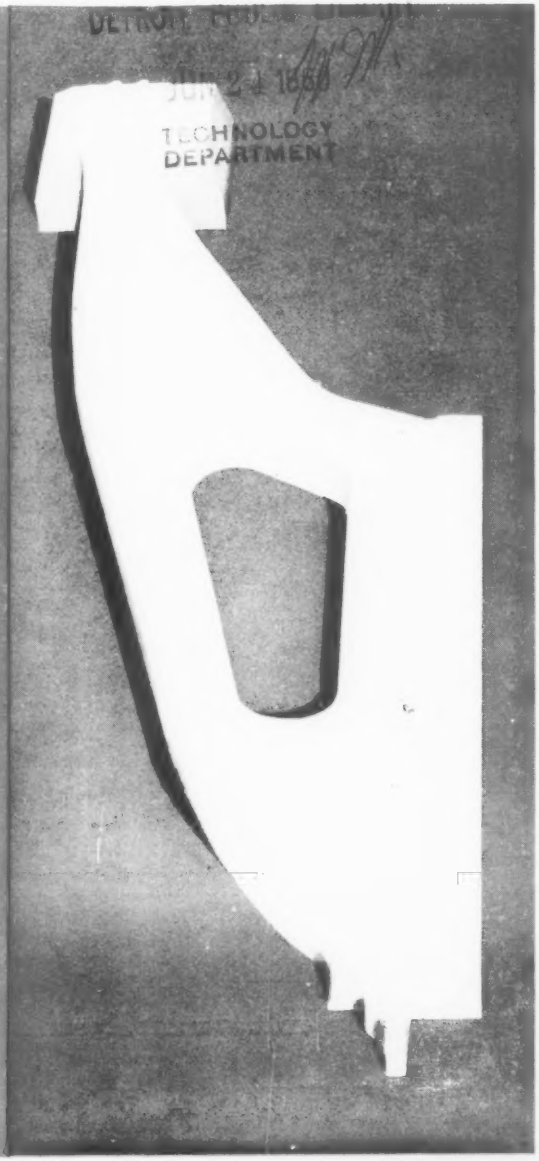

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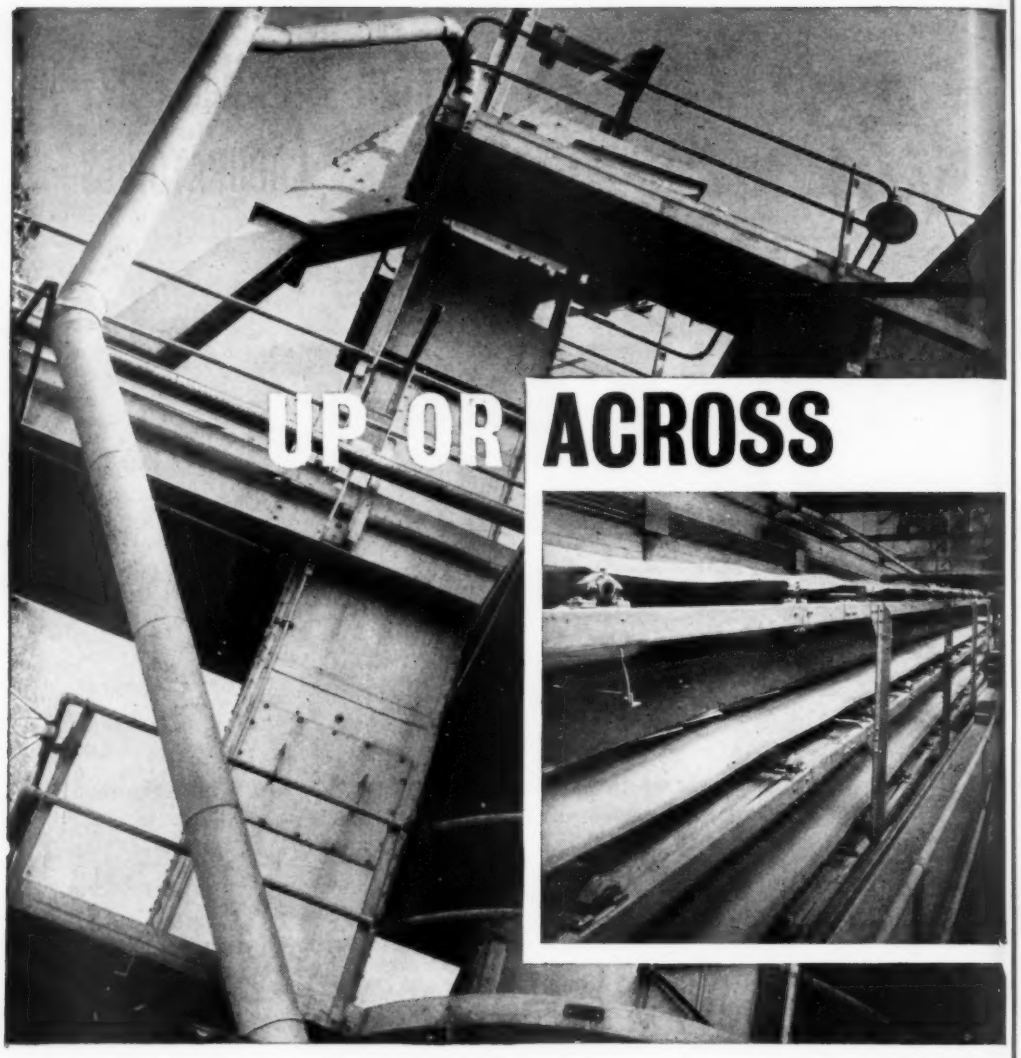

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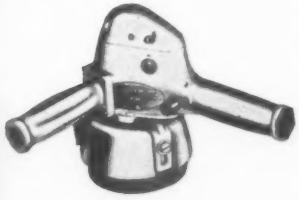

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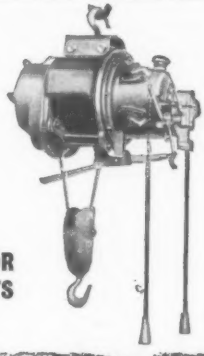

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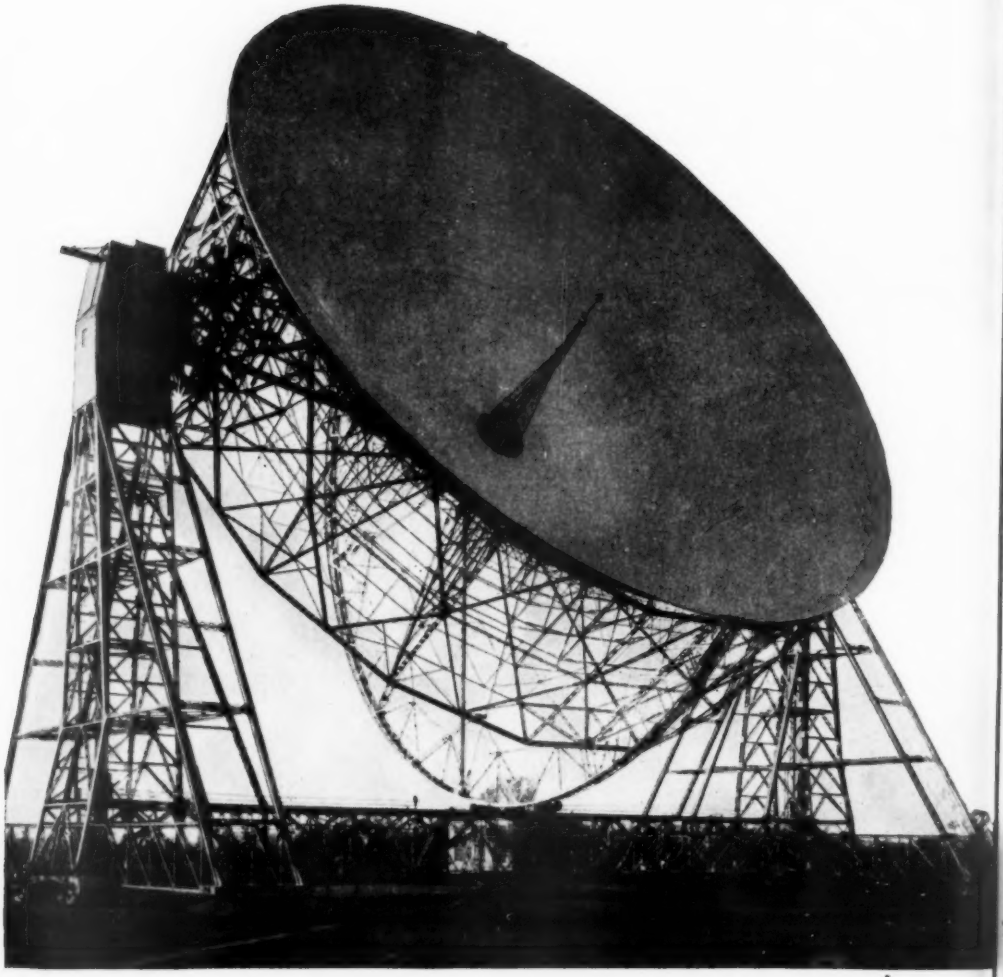

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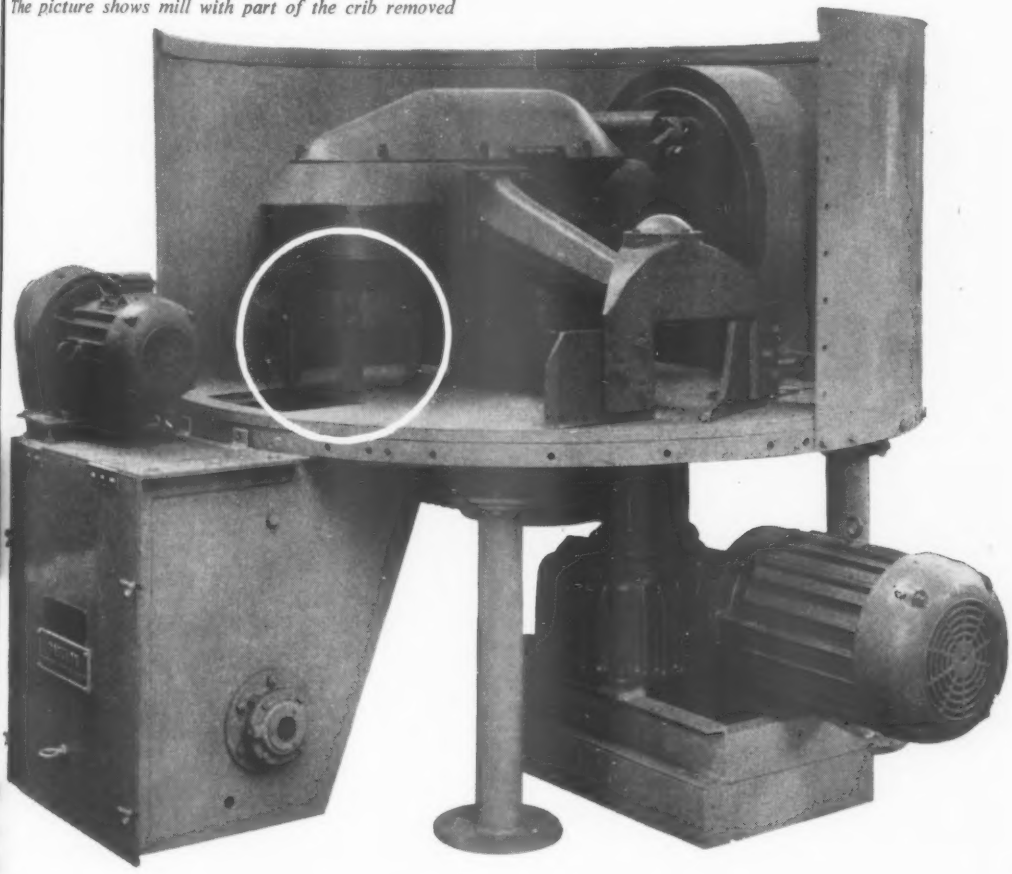

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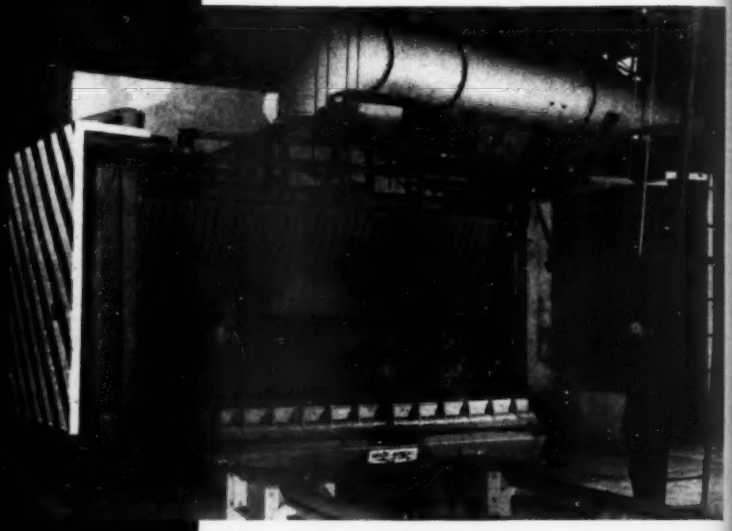
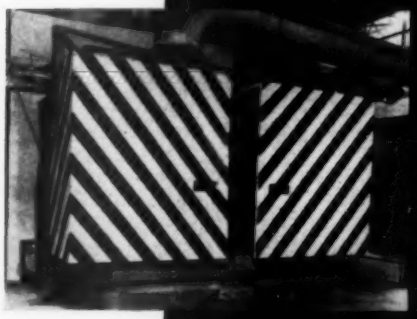


The photographs show the doors in both the open and closed positions.



An interesting feature of the Holmes-Schneible Multi-Wash installation in the steel foundry of English Steel Castings Corporation Limited are the hydro-pneumatically operated doors enclosing the shake-out hood. These doors which were designed in co-operation with English Steel Castings Corporation Limited, have been very successful in operation and have resulted in a considerable saving of exhaust volume necessary at the shake-out position. The installation is completed by two size 138 type 'JC' collectors, a dewatering tank, hoods on the sand preparation plant, fan and ducting.

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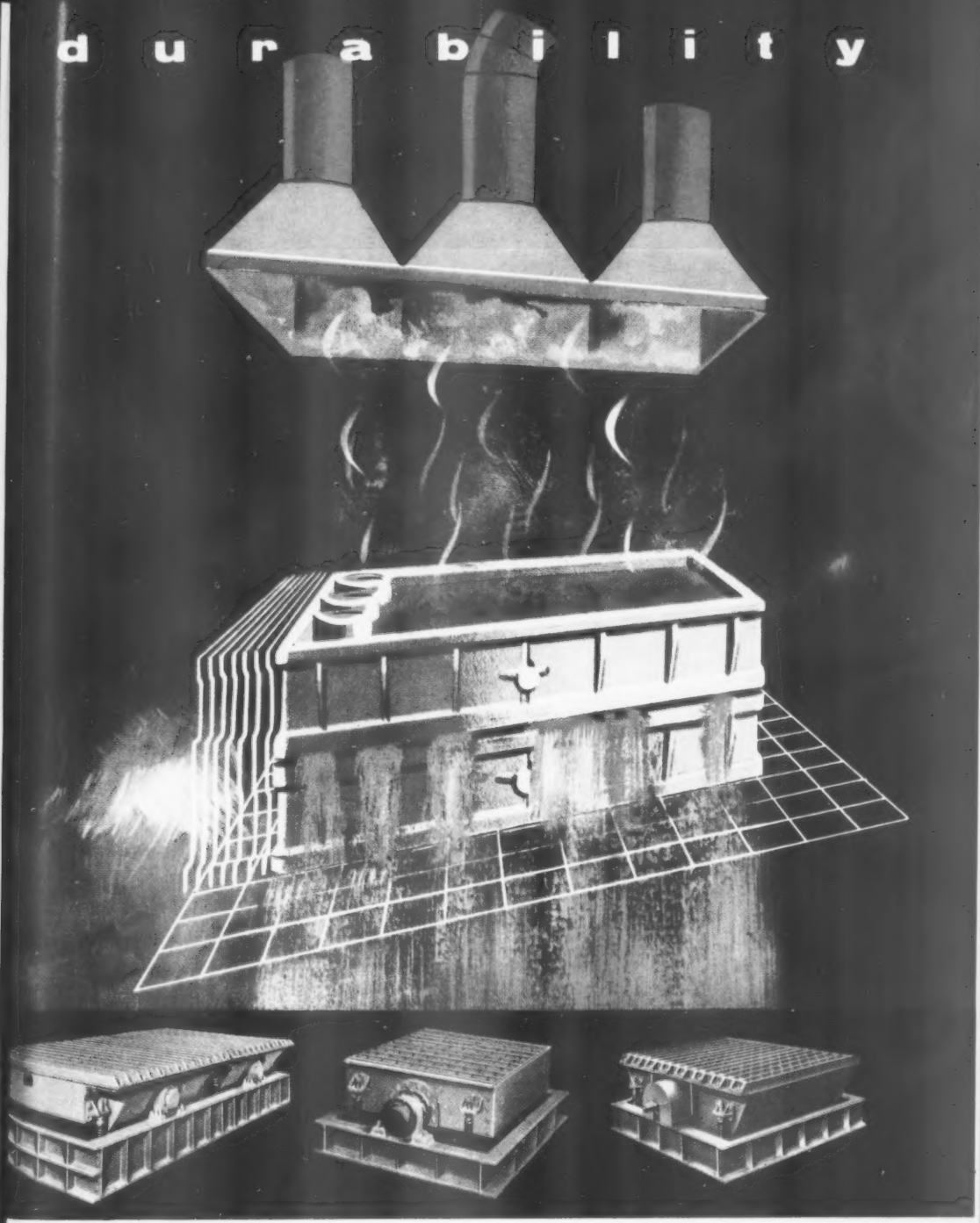

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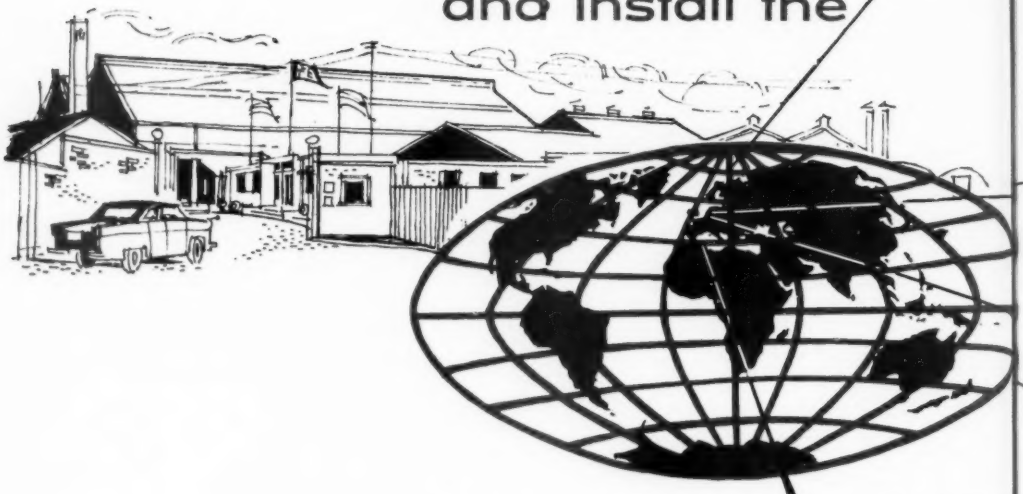

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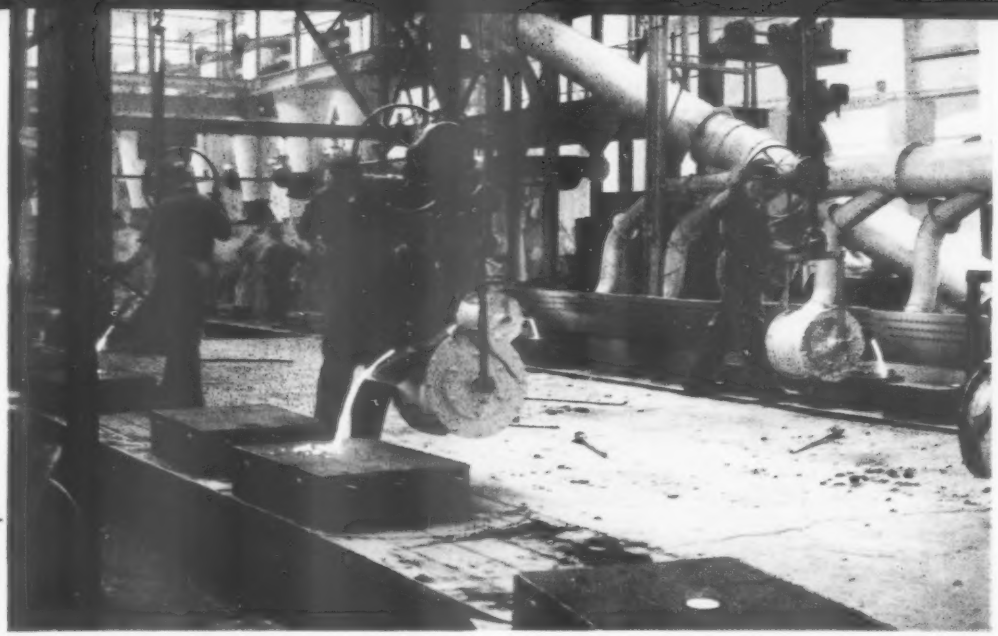

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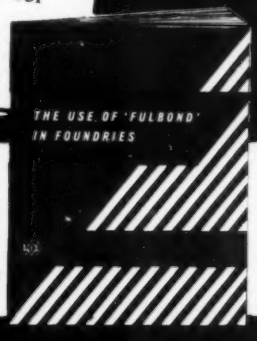

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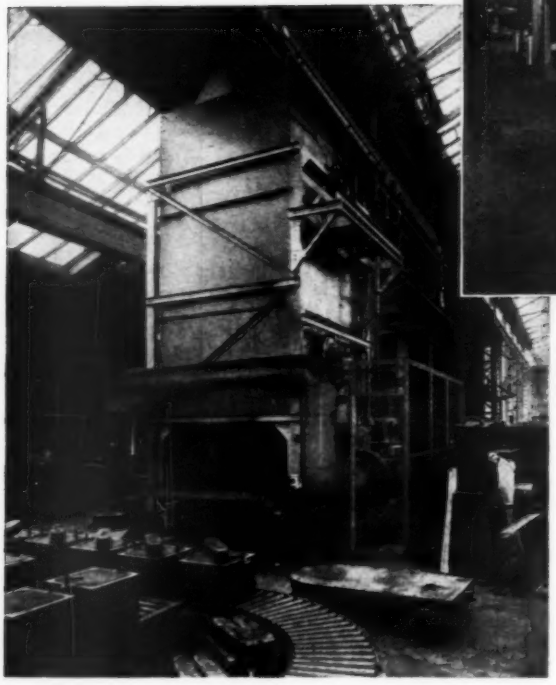

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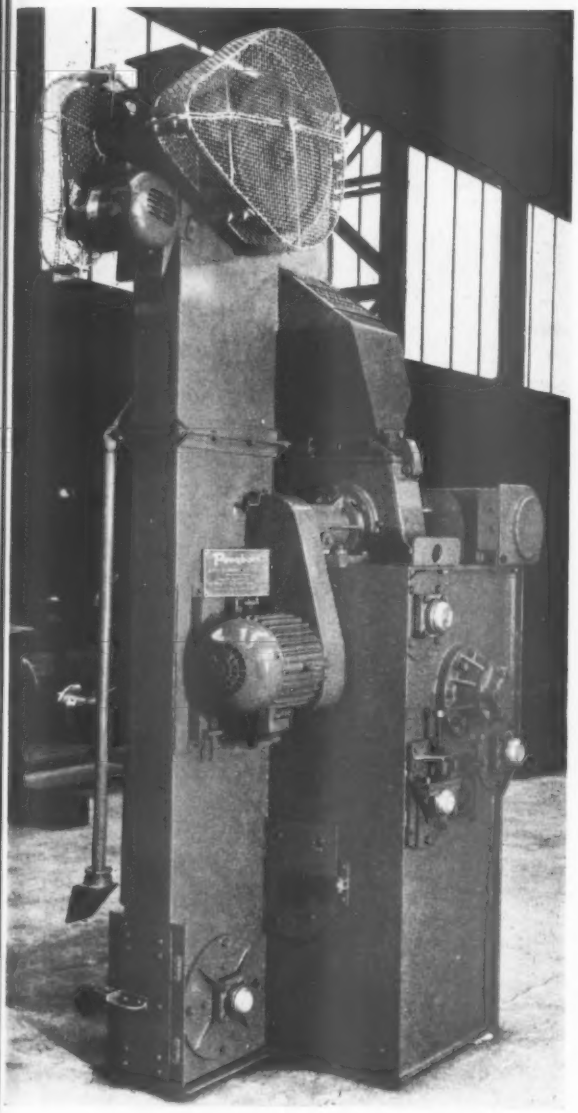

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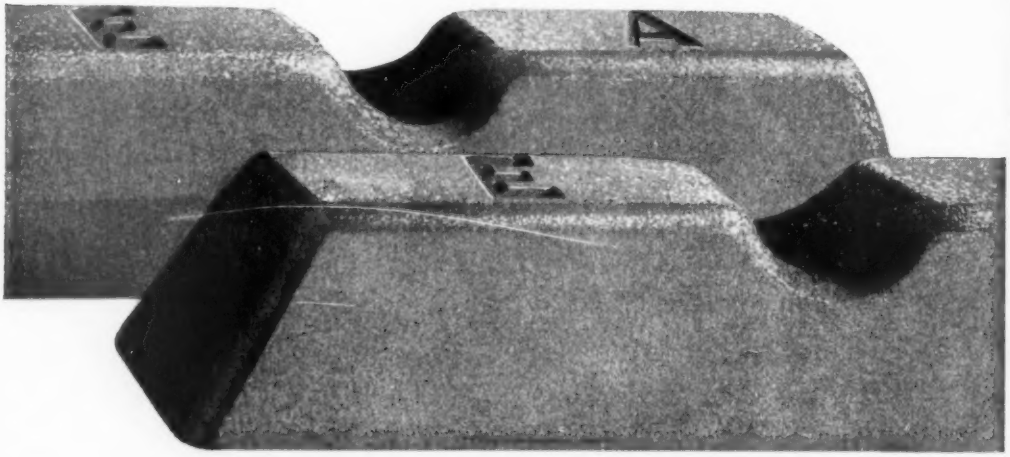

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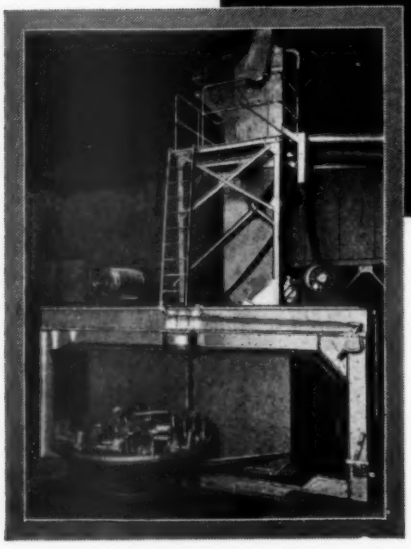
using Wheelabrator Steel Shot



The plant illustrated is a 6ft. Dual Swing Table Wheelabrator installed at Messrs. Jarrow Metal Industries Ltd. It is engaged in cleaning a miscellaneous load of steel castings and the cleaning cycle is eight minutes. This type of plant enables one table to be unloaded and reloaded whilst the other table is under the blast stream and each table is capable of carrying two tons.

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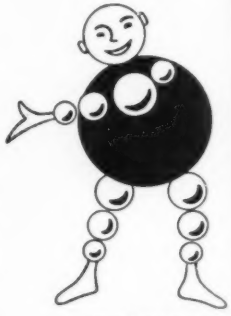

This plant was installed in November, 1956 and in May, 1957 had not used all of the 5 tons of S.460 WHEELABRATOR Steel Shot delivered.
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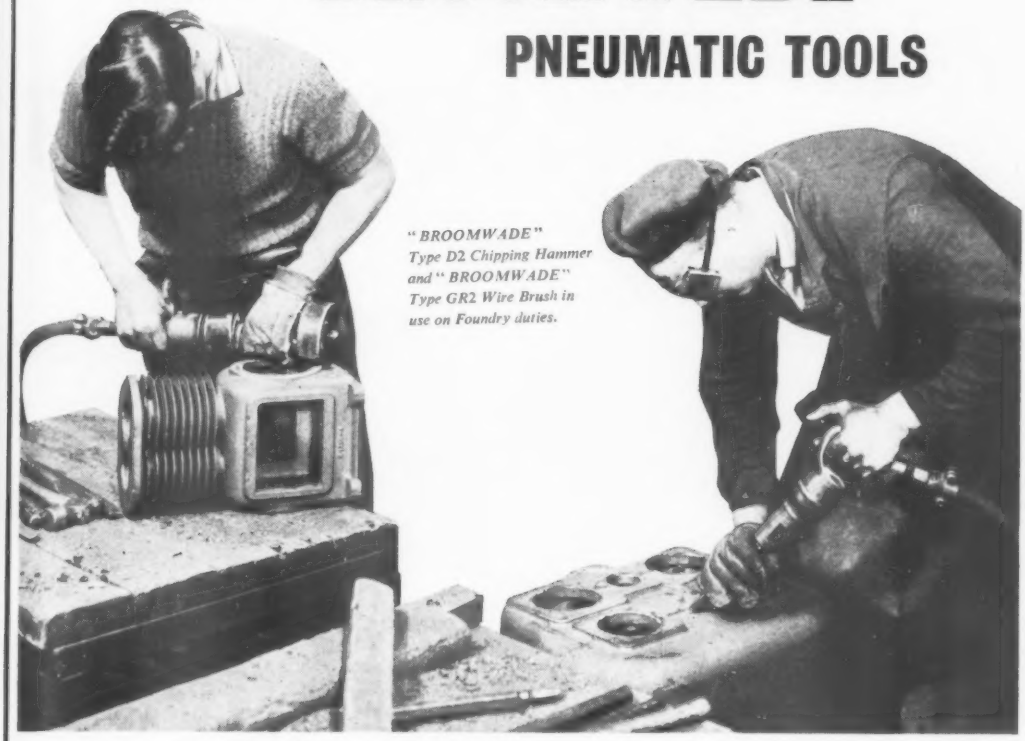

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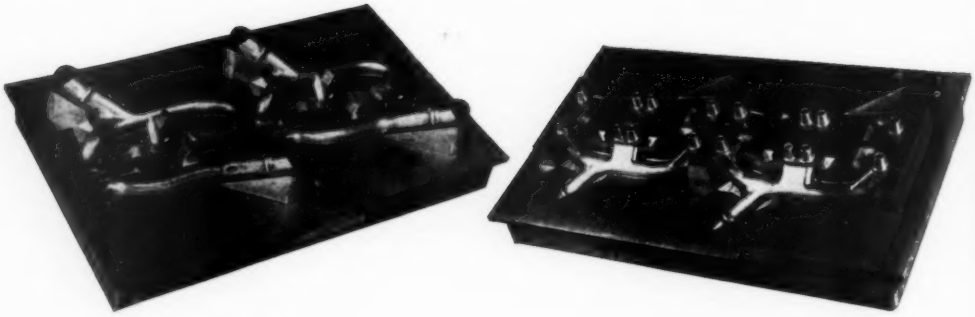

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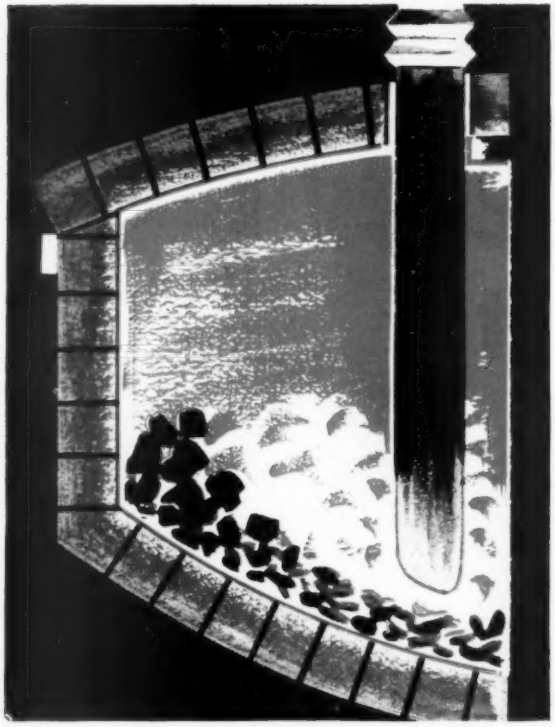

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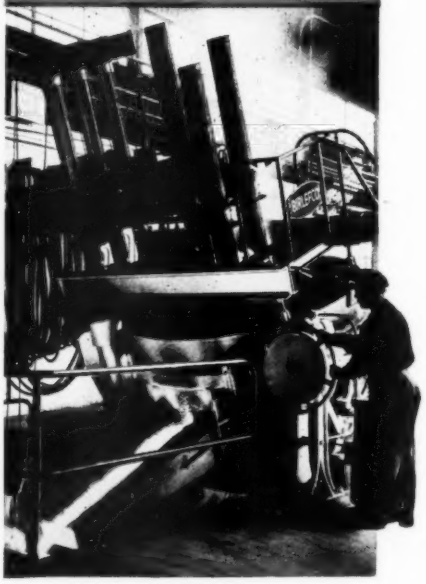

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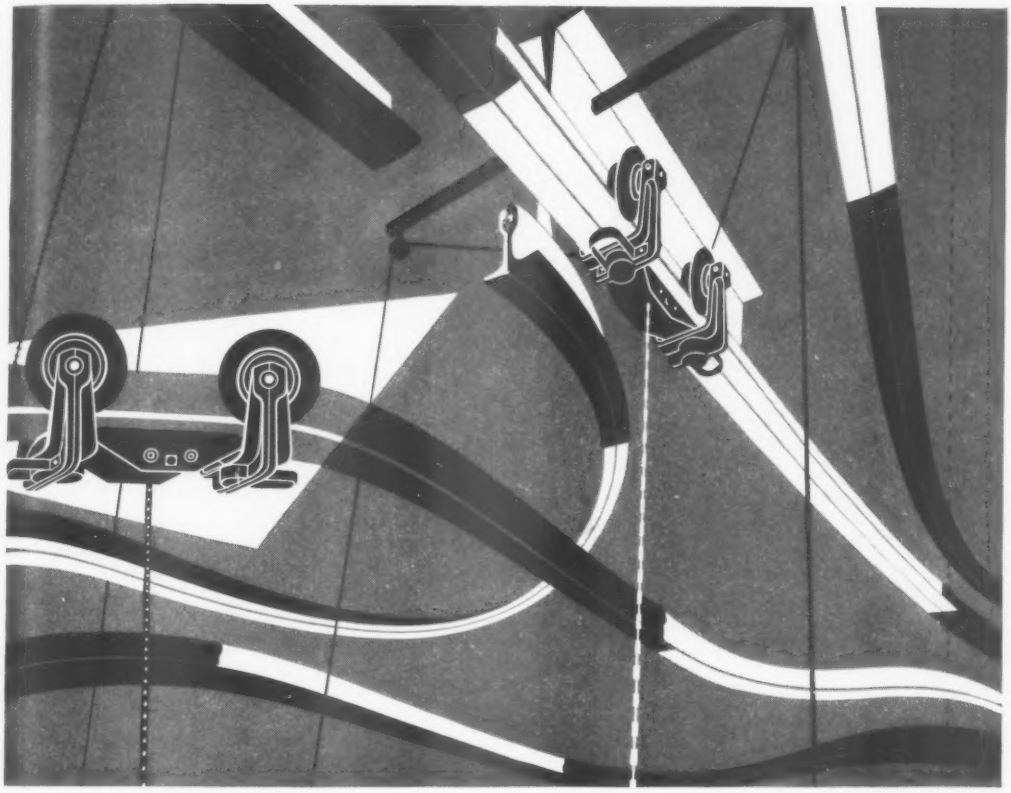

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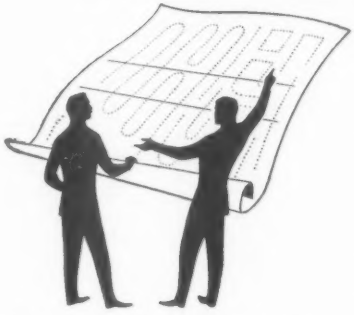

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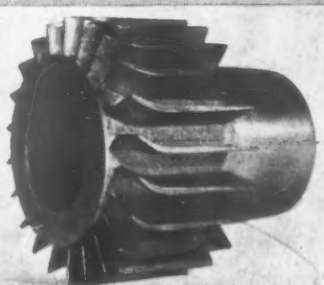

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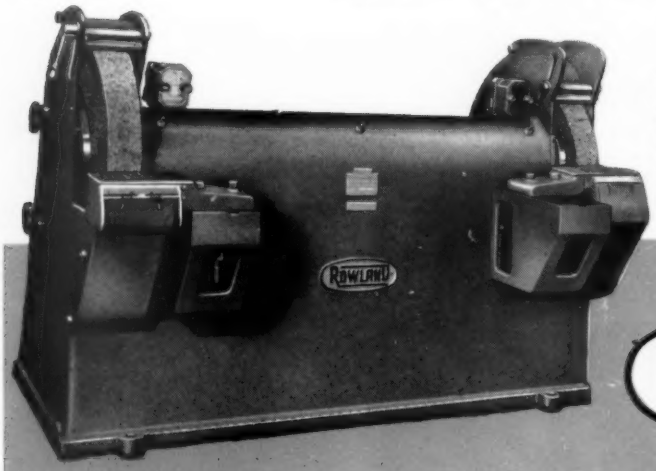

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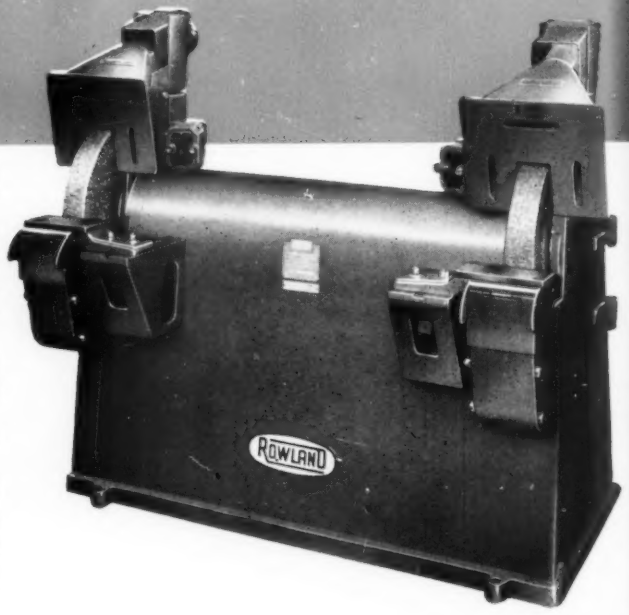

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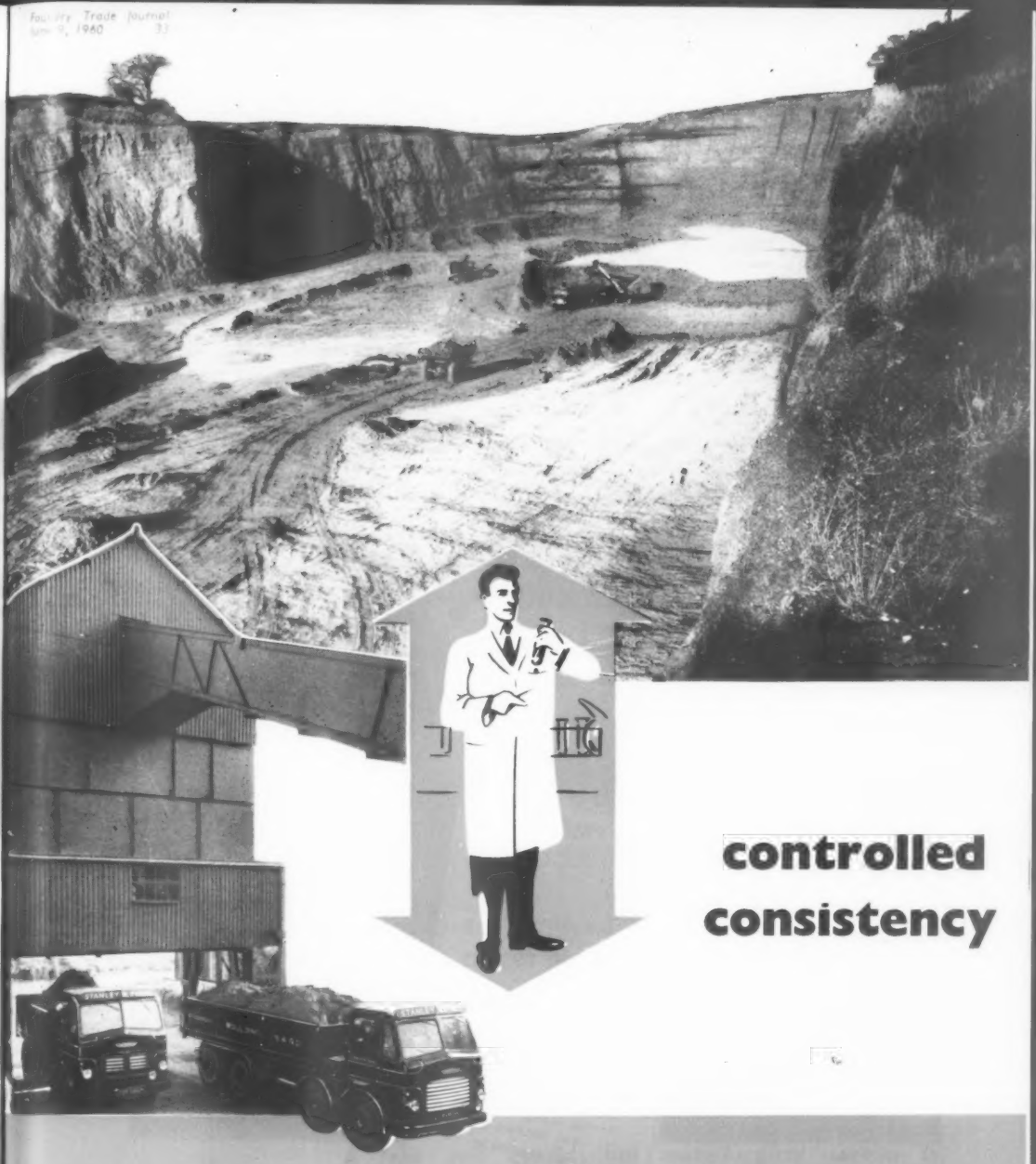

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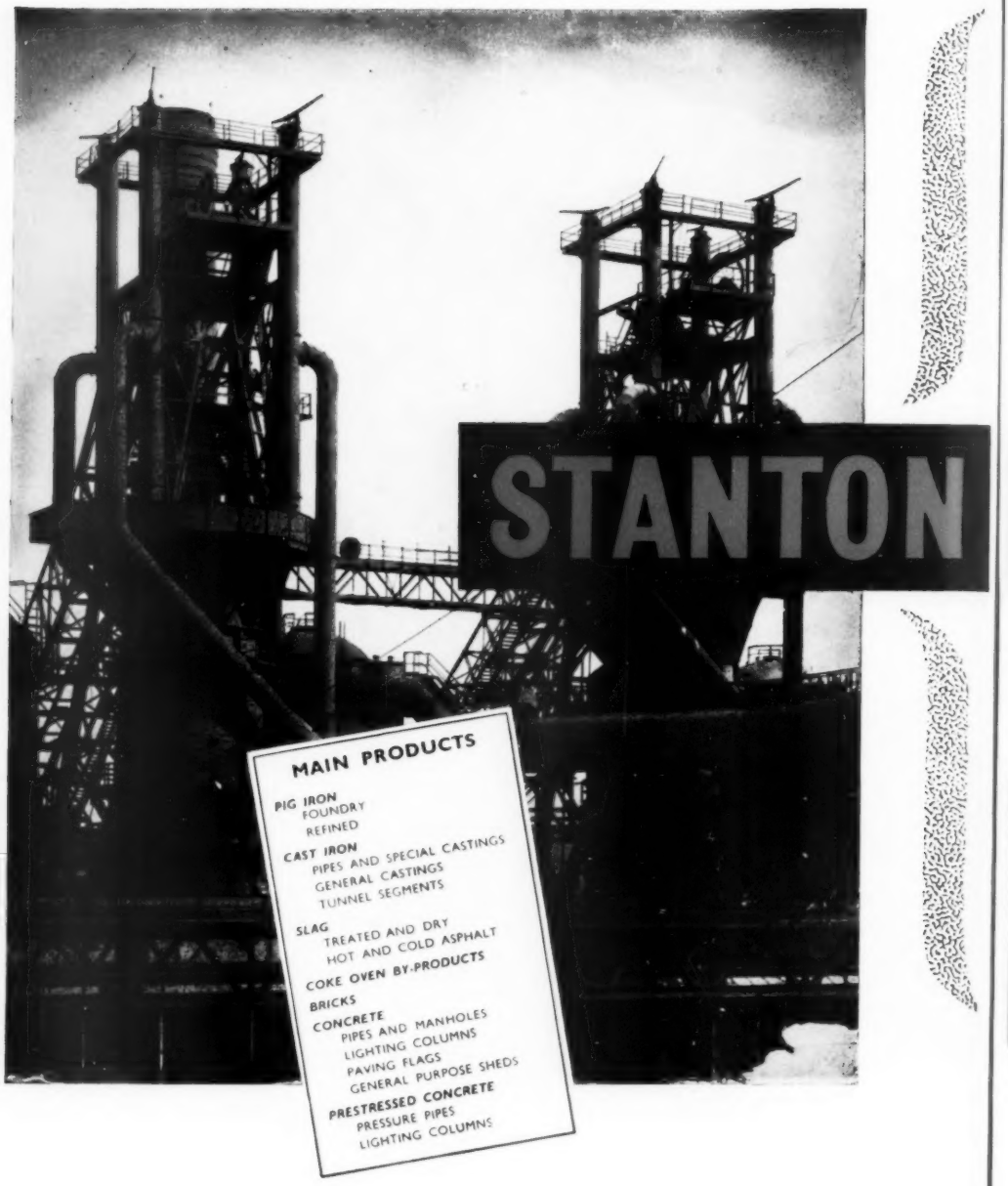

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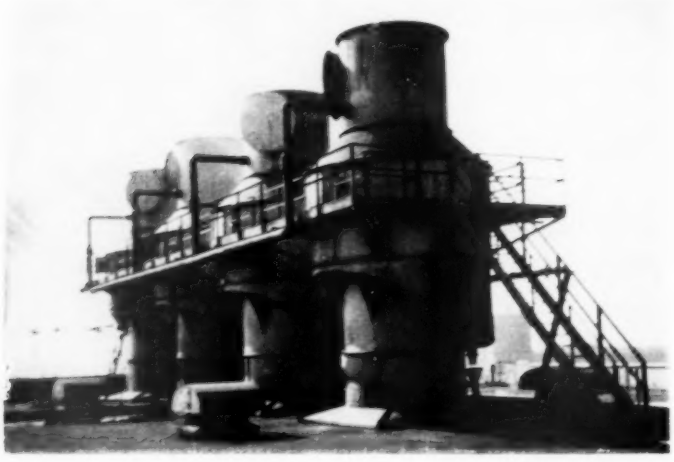

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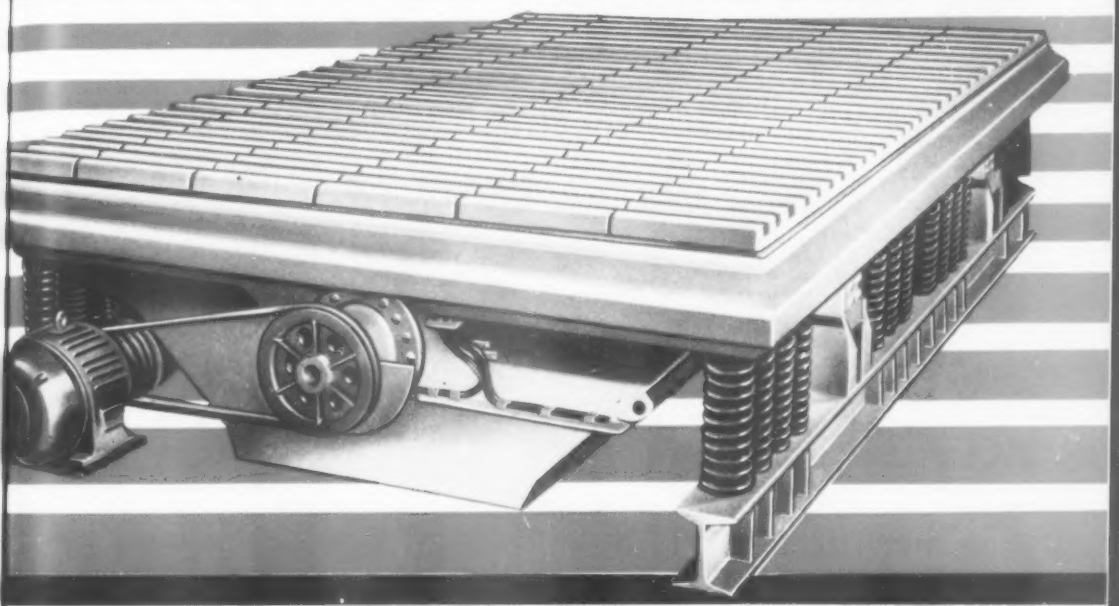

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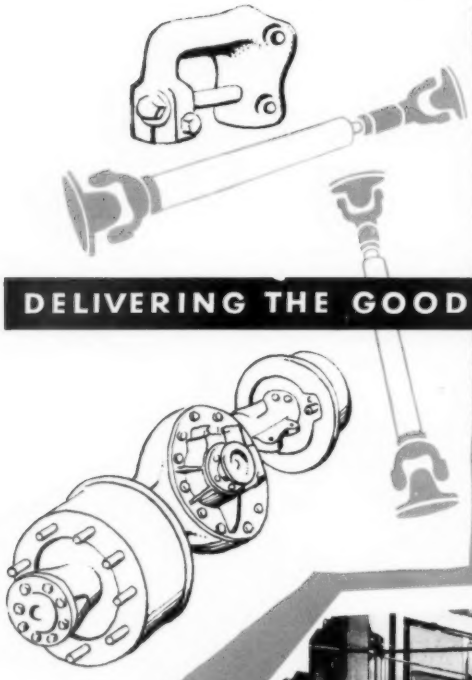

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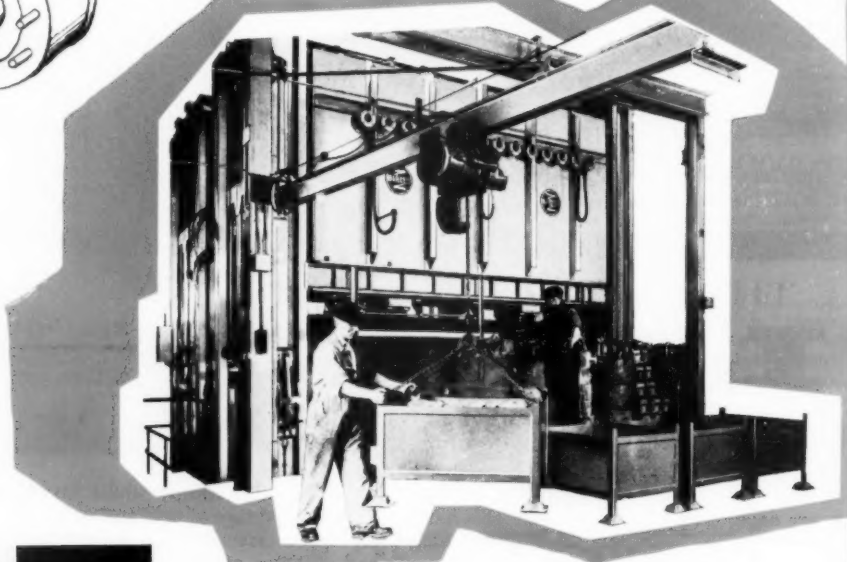

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FOUNDRY TRADE JOURNAL

Vol. 108 June 9, 1960 No. 2270

Established 1902

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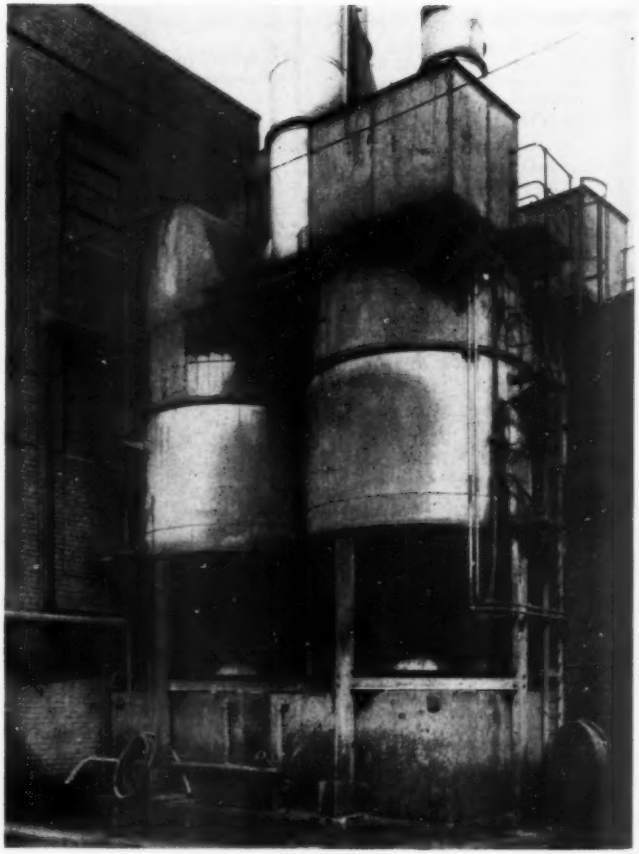

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FOUNDRY
TRADE JOURNAL
Vol. 108 June 9, 1960 No. 2270

Building for the Future

The recently held European Foundry Apprentice Competition focused the attention of our own and that of related industries to the importance which is to be attached to the proper training of neophyte moulders and coremakers. Some of the larger foundry concerns operate their own foundry schools, which give excellent tuition to recruits on their own staff, but the majority of foundries are not well placed to undertake such serious responsibilities. To-day, conditions are such as to suggest that such efforts are best undertaken by co-operative efforts. This was realized some eleven years ago, when a few enthusiasts created the National Foundry Craft Training Centre, which was located in an unused shop attached to an iron foundry in Swan Village, West Bromwich. (Swan Village sounds much more rural than is actually the case!)

Initially, the trustees showed wisdom in associating with the project a well-run, nicely-furnished, pleasantly-situated hostel, where parents could be assured that the boys attending the centre were well cared for in a physically and morally healthy atmosphere. It was a unique industrial enterprise and has been productive of much good, as no fewer than 574 apprentices sent by 183 firms have attended the courses provided. The industry now well recognizes that ex-students of the Centre have been better and more versatile craftsmen as a result of their attendance.

The time has now arrived when the Centre no longer responds adequately to the needs of the industry, either as to working space or teaching equipment. Thus, the trustees have taken a bold step in asking for the industry to support an appeal for a minimum of £100,000. This amount if reasonably spread over the whole UK foundry industry—iron, steel, non-ferrous and light alloy—is but a " flea-bite," for it must be remembered that the Centre does indeed cater for all sections of the industry. We make no claim to be good at " begging," but are sincere in stating that subscriptions sent to Heathcote and Coleman (the secretaries to the trustees) at 69, Harborne Road, Birmingham, 15, will represent a worthwhile insurance premium for the future prosperity of the foundry industry. As Commonwealth foundry firms still, to some extent, rely on home-trained staff for the supervision of their foundries, they too might feel inclined to recognize in monetary fashion the help they have received from UK-trained personnel.

Bradley & Foster Golf Competition

The eleventh annual golf competition organized by Bradley & Foster, Limited, for the T. A. McKenna Cup was held at the South Staffordshire Golf Club, Tettenhall, Wolverhampton, on Friday, May 27. This was a change from the venue of several previous years, but, at 81, there was a record number of competitors. The competition was played as a 3-ball medal round, and the event was favoured with fine sunny weather. The winner was Mr. R. P. Staves of Grazebrook Foundry Limited, of Dudley, with a net score of 69. The runner-up was Mr. A. Froggatt of John Hill & Sons (Ironfounders) Limited, Wolverhampton, with a net score of 70.

Following the competition, a dinner was held at the Victoria Hotel, Wolverhampton, at which the cup was presented—approximately 150 attended. Mr. G. E. Lunt, managing director of Bradley & Foster Limited, presided. During the course of his remarks, Mr. Lunt stated that the increasing numbers had necessitated the change in venue as participants were now more than could be accommodated at Lichfield. He felt this was an indication of the growing popularity of the competition.

The cup was presented by Mr. M. Froggatt, managing director of the Staveley Coal & Iron Company, Limited. Mr. V. L. Nicholls of Grazebrook Foundry Limited, proposed a vote of thanks to Bradley & Foster Limited. It was the general opinion that this year's competition had been one of the most successful and enjoyable of the series.

Mr. M. Froggatt (left) presenting the McKenna Trophy to Mr. R. P. Staves at the dinner in Wolverhampton following the Bradley & Foster Golf Competition. On the right is Mr. G. E. Lunt, managing director of the host firm.

W. Clough & Company, Holly Hall Works, Low Moor, Bradford, have been accepted as a member-firm of the National Society of Master Patternmakers.

Ownership of Patterns

Conditions of sale as related to the ownership of patterns have been a matter which has concerned founders all over the world ever since patterns were first used. Much controversy has existed, and still crops up at times, about what is the custom of the trade. In an effort to resolve some of the problems, the Council of Ironfoundry Associations included a clause on pattern ownership in its statement on conditions of sale, and the matter has recently been taken a step further, at least as far as one group of ironfounders is concerned, by comments appearing in its *Bulletin*, issued to members, as follow:

The CFA Conditions of Sale state 4(d): "Where patterns are not supplied by the buyer, only such patterns as are specially made and separately charged in full shall become the property of the buyer when paid for."

The clause clearly intends that the buyer shall not secure property in patterns specially made until he has paid for them a price which fully reflects at least the material and labour costs involved in producing them. *Prima facie*, therefore, he does not secure property in the patterns if the seller can show that the buyer was not charged the full cost. Unfortunately, however, difficulties can arise.

First, the buyer may try to show either an express or implied agreement (deduced either from the circumstances of the particular sale or from the previous course of dealing between them) to vary the terms of the clause so as to allow property in patterns not "charged in full" to pass to the buyer.

Second, where the invoice does not state that the full cost is being charged, the problem arises of establishing whether the seller has made it sufficiently plain to the buyer that he is, or is not, being "charged in full" for the patterns. It may be that in many cases the "charge" will be so modest that the buyer would inevitably be held in law to have appreciated that he was not being charged in full; conversely, the cost may be such that the law would hold that the seller was plainly intimating to the buyer that he was being "charged in full." Between these two levels, however, there may well be a wide borderland of dispute, and where any ambiguity would be interpreted against the party responsible for causing the difficulty. The effect of such ambiguity would be that the buyer would secure property in the patterns without having to pay the "full charge."

To guard against this danger, an ironfounder who wishes to make some charge for the patterns, but does not wish to lose his property in them is advised to insert on his quotation and/or separate invoice words to the following effect:—"Payment of this charge will not constitute the passing of property in the patterns under the terms of Clause 4 (d)."

Reprinted from the National & Midland Ironfounders' Association's June *Bulletin*.

After an interval of 25 years the Crystal Palace is again to become the site of a major international exhibition. In June, 1961 a new exhibition, the Construction Equipment Exhibition, will, by arrangement with the London County Council, be launched on a 25-acre area at the Crystal Palace. The exhibition grounds will include the area formerly occupied by the 1851 Exhibition Palace itself and also the terraced gardens designed by Sir Joseph Paxton over 100 years ago. The organization of the Construction Equipment Exhibition will be carried out by Industrial and Trade Fairs Limited, Drury House, Russell Street, Drury Lane, London, WC2, to whom all enquiries should be addressed.

Versatility the "Key". . . . .

. . . . to Activities at the Willenhall Foundry and Engineering Works of Arthur Shaw & Company, Limited*

It is surely appropriate, when talking of firms in Willenhall (a town steeped in centuries-old traditions of lock manufacture), to use key words, but only one such word—versatility—is needed to summate adequately the manifold activities of Arthur Shaw & Company, Limited, situate in that town. This concern undertakes manufacture of many types of castings and hardware. Thus, the account of the plant which follows deals first with the foundry, which is basic to the whole activity, and then records the subsequent processing of castings and the manufacture of end-products, showing how the whole is integrated. The moral of "not putting all your eggs in one basket" is well brought out, as is flexibility to suit changes of circumstance.

Changes through the Years

Recently, Arthur Shaw & Company, Limited, have celebrated their 150th anniversary, and it is interesting to examine the present-day set-up in what follows, and to comment on the reasons for the manifold development and change which have accompanied the passing years. Originally, the company commenced operations at the Denver works, and the Shaw Foundry Company was not acquired until 1912. Like many of its type in the Black Country, the works started in a small way, the efforts being mainly directed to the manufacture of locks and ancillary gear. To-day, included in the finished goods which leave the Denver works every week are no fewer than twenty designs of locks (for which the company has earned a world-wide reputation for quality), cabinet hardware, castors, door fittings, builders' ironmongery, bed fittings and hearth furniture.

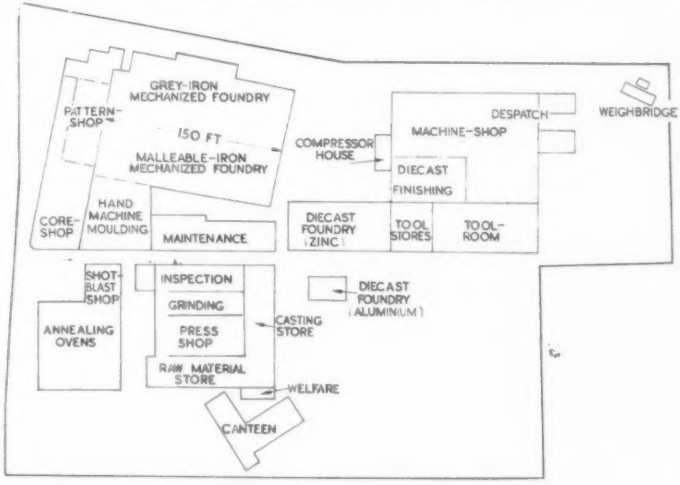


FIG. 1.—*Layout of the foundry section of Arthur Shaw & Company, Limited (formerly known as the Shaw Foundry Company).*

From the foundry itself, trade castings in grey iron and malleable iron (whiteheart), and die-castings (zinc and aluminium) and pressings are despatched for many varied trades.

It is necessary to make clear at the outset that the facilities of the foundry, while basically arranged to suit the manufacture of the firm's end-products, are "dove-tailed" to the supply of castings for the general market. The latter amount to as much as 60 per cent. of the total castings output, and hence it follows that production for outside interests can be on a very competitive basis. This point about the usefulness of "bread and butter" lines of finished goods, and their contribution to economical foundry operation, cannot be emphasized too strongly. A total of approximately 450 people (excluding staff) are employed, which includes personnel at both Denver works (70,000 sq. ft.) and the foundry (75,000 sq. ft.), which is about

* To mark the 150th anniversary of the firm, a lengthy account of the works of Arthur Shaw & Company was being prepared for publication when it was learned that it was one of the works to be visited by parties of the Institute of British Foundrymen during the forthcoming Malvern Conference. To publish this story now is thus doubly appropriate. In many respects, the IBF visit is unique because it is believed to be the first time in which ladies have participated in a foundry visit jointly with IBF members. The works was chosen because it is a "light" foundry with a variety of production and a selection of end-products in the form of hardware. Time may prevent the parties seeing the Denver Works of the firm where plating and assembly is carried out, but an exhibition of a representative selection of finished products will be on view.

Arthur Shaw & Company, Limited

a quarter of a mile away. Figs. 1 and 2 show the present layout of the two premises.

SHAW FOUNDRY COMPANY

Iron Foundry

The various departments of the iron foundry can be seen in Fig. 1, the iron foundry (grey and malleable) taking up the largest floor area. Accounts of the layout, methods applied and plant embodied in the set-up have been recorded previously in the FOUNDRY TRADE JOURNAL.† It is only necessary therefore to refer again to the salient features, and to recent changes. The output of the foundry (layout as Fig. 2) is of the order of 35 tons of grey-iron castings and 15 tons of malleable castings per week. It is necessary to realize, however, that the tonnages refer to an average unit weight of approximately 1 lb. only, covering, besides the company's own requirements for hardware (much of which is vitreous enamelled), castings for the agricultural, electrical, cycle, textile, mechanical-handling, accounting-machine and automobile industries.

Moulding

Moulding is carried out on Coleman-Wallwork WT.563 and BMM, H.PL.1 & B.T.1 machines, and extensive use is made of the "pop-off" type moulding box of the company's own manufacture. A new unit, adjacent to the main plant (the position can be seen from Fig. 2), has recently been installed to cater for larger work than is normally done on the pallet conveyor, that is with a longer cooling-cycle, and also for shorter run jobs. Incorporated in this unit (see Fig. 3) are three machines, two pin-lift and one roll-over, and twin roller-tracks which lead to a knock-out (shown at the far end of the illustration). The sand plant feeds both sections of the foundry, and the use of separate facing-sand adds greatly to the flexibility possible. From the previous survey, it can be seen the overhead structure of the plant is built on to large facing-sand hoppers, from which the moulders shovel out their supplies.

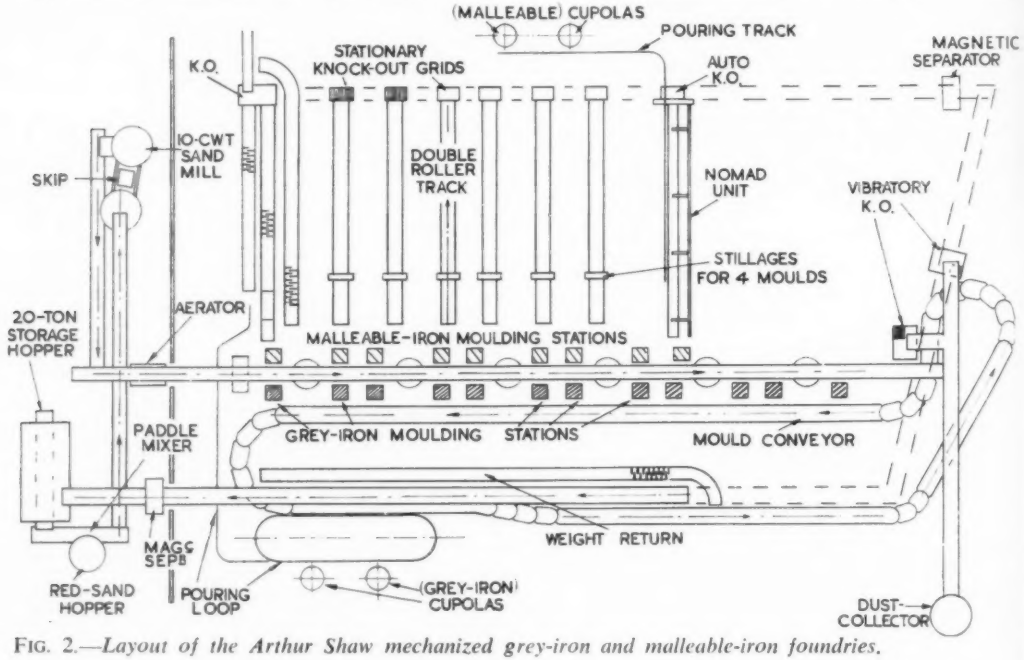


FIG. 2.—*Layout of the Arthur Shaw mechanized grey-iron and malleable-iron foundries.*

Melting

Melting is carried out, for both grey and malleable iron, in pairs of 24-in. dia. cupolas (Constructional Engineering Company, Limited). For grey iron, where the demand is continuous (approximately two tons per hour), a front-slagging device (see Fig. 4) is used very successfully; although the slag stream is small, experience has proved that extra limestone is needed to keep this fluid. A soft grey iron is melted with a medium phosphorus content (0.8 per cent. approximately). The metal charge, totalling 5 cwt., comprises:—20 per cent Stanton low-phosphorus pig-iron, 40 per cent. bought cast scrap and 40 per cent. foundry returns.

† For example, see: "Pop-off-type Moulding Boxes for the Mechanized Production of Light Castings," by A. J. Crook, JOURNAL, February 10, 1955, page 141.

FIG. 3.—*Roller-conveyor unit for the production of "short-run" batches, or heavier castings requiring a longer cooling cycle. The pouring runway links up with main grey-iron cupolas.*

Annealing

The foundry is well served by its own metal patternshop and coreshop, cores being made mainly on cartridge-type blowers. Of special interest is the annealing installation for malleable iron, although some grey iron is also heat-treated. The ovens are of the batch type (capacity of 96 cans each), with an inside measurement of 16-in. dia. by 16-in. high, taking approximately seven tons of castings. The ovens are fully insulated with "Selfrac" hot-faced bricks (Allens of Halifax) for the first 9 in., and these bricks are also incorporated in the 9 in. of brickwork of the lifting doors. The ovens are oil-fired (Esso light fuel of a viscosity of 200 sec., No. 1 Redwood), the oil being supplied from a ring main, with an inline heater from a main storage-tank (3,000-gall. capacity).

Mechanical Handling

The cans are moved on roller conveyor around the packing station (see Fig. 5) and are placed on stools by a Yale ½-ton hoist. They are loaded and unloaded into the ovens by means of a Conveyancer 2-ton diesel fork-lift truck, using a cradle of the company's own design (see Fig. 6). This truck also moves all castings from department to department in the foundry. For transport of raw material, one of the biggest money-savers has been the acquisition of a Muir Hill LH.1 bucket loader (see Fig. 7) fitted with a 30-h.p. Perkins P3 diesel engine. This transports pig-iron, coke, scrap, sand, etc., and also removes rubbish to the company's tip by towing its own trailer.

Press Shop

In the press shop at the same works, 15 presses are installed (from 2 to 60 tons capacity). Two of these are fitted with automatic coil-feed devices, and two with mechanical "hands." They produce such items as lock cases for rim and mortice locks, and furniture-trade pressings, castors in particular. Adjacent to the press shop is the raw-material store, where adequate stocks of steel and brass rod in various sizes are held for subsequent working in the machine-shop, and steel in strip and coil form for the press shop.

Die-casting Foundry

In the die foundry also the production is split between castings for the company's own use, mainly for hearth furniture and locks, and those for many other trades. Carburettors and fans for small petrol engines are cast to close tolerances,

FIG. 4.—*Pair of 24-in. cupolas serving the grey-iron plant, showing the front-slagging spout, with metal flowing from the central spout, and the small slag stream flowing over the weir of the tapping-box. The short spout leading from the front of the box is for starting up from cold, and running the last metal off at the end of the shift. This picture also shows the design of ladles, with the handle cranked for easy control.*

FIG. 5.—*Packing of annealing cans with ore (delivered from hoppers fed by an inclined belt direct from the can-emptying station).*

as are the parts for business machines and domestic appliances. The automobile trade is catered for in particular, in the way of car "trim" and window fittings, many of which are plated and assembled in the finishing section at Denver Works. In this department, the casting of aluminimum and zinc, etc., is carried out in two separate sections. The former standardizes on the Peco model-5C cold-chamber machine (see Fig. 8). This machine has a 250-ton lock-pressure, a casting area of 90 sq. in., a maximum of 4 lb. "shot" weight, and is sequence controlled. Typical jobs produced on this unit are items for a "do-it-yourself" tool-kit, and the electric-mower end-shield shown in Fig. 9. In the section where zinc-base die-castings are produced, EMB. No. 12 machines are mainly in use, these being pneumatically operated. Also in this section are 21-in. Schultz machines (part pneumatic and part hydraulic), 16-in. Schultz unit (ditto), and a Peco No. 2H model which is fully hydraulic and sequence controlled. Fig. 10 shows a 21-in. Schultz machine in operation.

Tool-room

To a visitor entering the tool-room (see Fig. 11) situated adjacent to the die-casting foundry, the striking features are the neatness of the department and its colourfulness. Broadly speaking, the tool-room is divided into the following sections—milling, grinding, turning, shaping and fitting. Six machines in all are installed in the milling section, and these range in size from a small Alexander pantograph to a robust Cincinnati 16-in. vertical miller, including Hydrotel copying equipment, as well as a K & T 20 rotary-head miller (the latest addition to this department, purchased specially for die-sinking). A selection of six Universal, surface and tool-and-cutter grinders, and four lathes, cater for the firm's requirements for grinding and turning. Two 14-in. and one 24-in. shaper fulfil the shaping requirements. In the fitting section, the whole of one side of the shop is

FIG. 6.—*Loading an 8-ton malleable-iron annealing furnace by means of a specially constructed cradle mounted on a standard fork-lift truck. The door of the furnace in the background is in the lowered position.*

FIG. 7.—*Muir Hill LH1 front-end loader delivering coke to the cupolas—used also for moving scrap, pig-iron, moulding sand, waste, etc., for hauling a trailer to the company's own dump, and bringing coke from railway sidings.*

occupied by benches for the die-sinkers and toolmakers. These are flanked by a line of small machines, comprising three drillers, two bandsaws, two filing machines, a small lathe and a marking-out table. The tool-room not only services the pressure-die-casting section, but also supplies the press shop and the machine-shop with all types of dies, jigs, fixtures and gauges; it is also a well-equipped hardening shop. In addition, the company is well served by its own drawing office, where all the company's dies are designed.

Machine-shop

In the machine-shop, pressure die-castings and iron castings are rough and finish-machined, in addition to brass and steel rod and sections. A large selection of machine-tools, capstans, auto's, milling machines, drilling machines, etc., are available, including special-purpose machines based on auto air-drilling units. (It is interesting to note the use of air for speeding operations.)

DENVER WORKS

The Denver works of Arthur Shaw & Company, Limited, is but a few minutes' walk away from the foundry, and it housed in a four-storey building. An office block occupying the whole of the top floor. The arrangement of process work on the various floors is shown schematically in Fig. 12. Although multi-storey buildings are not normally ideal, the works is well served by three lifts, and good use is made of "gravity" in the way of chutes and rollers for transporting work.

Ground Floor

On the ground floor is situated the main stores, where parts are received both from the company's foundry and from many outside suppliers, a complex system of control being needed to keep adequate balanced stocks. The remainder of the ground floor, apart from a boiler house and despatch desk, comprises a paint shop fitted with a continuous gas-fired stove, and the main vat plating shop.

FIG. 8.—*"Business end" of a Peco model 5C cold-chamber diecasting machine, with a shrouded bale-out furnace (Lees Hall) at the side of the operator. This machine is sequence-controlled from a panel partly shown in the foreground. The locking pressure is 250 tons, and modern two-stage plunger injection is incorporated at a pressure of 18,000 lb. per sq. in. max.*

Vat Plating

The company undertakes many kinds of plating (including chrome, nickel, copper, brass and zinc) in a well-equipped shop. Smaller items are barrel plated in the same department. A well-equipped laboratory carries out the required routine testing of the composition of the vats, and of the quality of the deposit, particular attention being paid to the specification by the automobile industry.

Second Floor

One particular metal-finishing process, required by the company for large quantities of hearth furniture and hardware, is copper bronzing. This process is catered for on this floor by a large automatic plant (see Fig. 13), where the copper

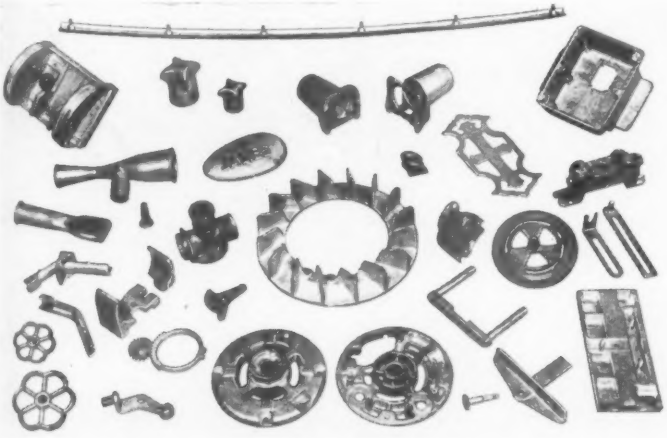


FIG. 9.—*Typical pressure-die-castings in zinc and aluminium alloys, produced by Shaws. The casting at the top is 33-in. long, used for automobile trim; these items are cast two at a time, each casting having six steel threaded inserts.*

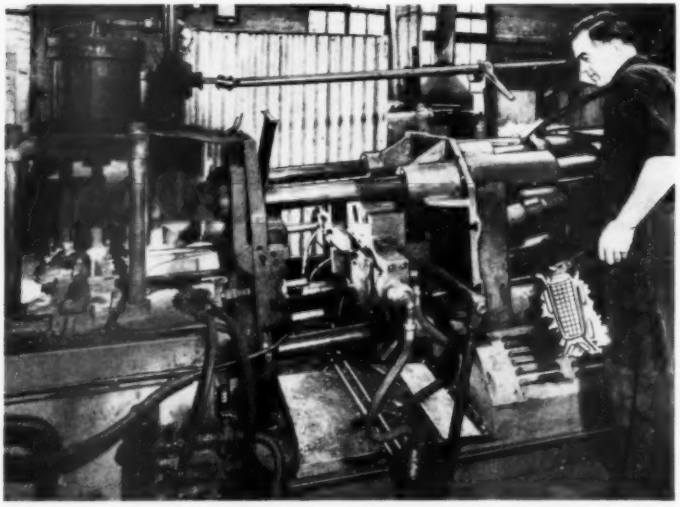


FIG. 10.—*Schultz 21-in. hot-chamber die-casting machine, operating for zinc-base alloy (capacity of machine 80 sq. in. area and 9 lb. in weight). The plunger is operated pneumatically at a pressure of 1,600 lb. per sq. in., the lock of the machine being hydraulic (locking pressure 150 tons). This particular die has hydraulically-operated cores (shown in the retracted position), operated by a separate, self-contained, mobile unit.*

deposit is subsequently dipped into a broze solution, and all the necessary "swills" and drying carried out. On the same floor is situated a relieving shop, which is a necessary adjunct to the auto plating plant and the lacquering shop. Storage space for finished goods, due to the variety and extent of the range carried, is of vital importance, and at least half of this floor is occupied by a finished-goods store of approximately 87,700 cub. ft. capacity.

Third Floor

This floor is taken up completely by the assembly department for all finished goods, and is split into four main sections, namely: locks, automobile-component assemblies, furniture castors and hearth furniture. The company has a staff of 65. All production is controlled by a central production control department, which translates all orders and customers' schedules into a work load for each department, including the foundry section. In the various departments the work is almost all arranged on a piecework basis. A work-study department staffed by three experienced methods engineers is maintained.

FIG. 11.—*General view of the tool-room at the works of Arthur Shaw & Company, Limited, which is well equipped and supplies the production departments with all types of dies, tools, fixtures and gauges.*

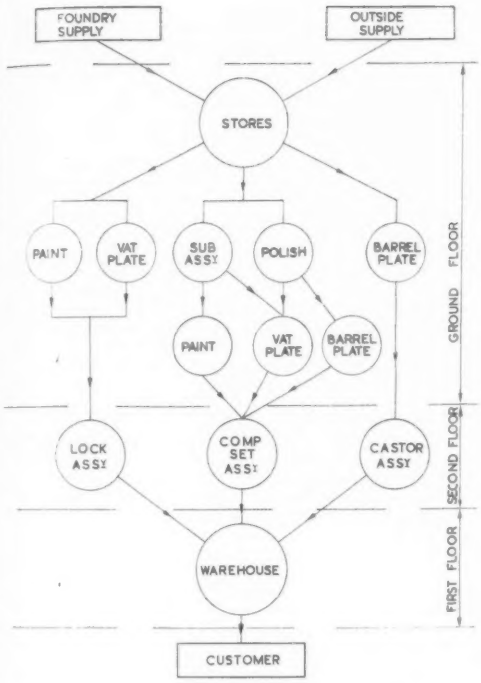
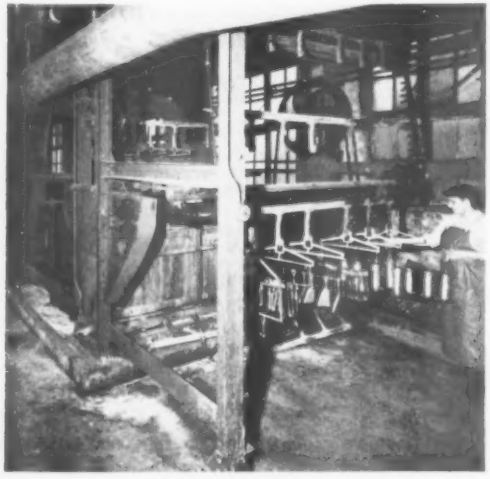


FIG. 12.—*Diagrammatic layout of the flow of material through Denver works, showing operations carried out on each floor. The third floor is devoted to assembly of the three main finished products—locks, companion-sets and castors.*

FIG. 13.—*View of the loading end of the automatic copper/bronze plating plant.*



CONCLUSION

In concluding this account of Arthur Shaw's multifarious manufacturing activities, it is hoped that the sound economics of the basic theories of diversified and balanced production within a limited field, which were enunciated at the outset, have been amply demonstrated. Shaw personnel have reason to be proud of their efforts to stay in the forefront after 150 years. To the writer, their activities epitomize the Black Country motto of "quality in quantity, be it pin or steamroller." It only remains for grateful acknowledgment to be made to the company for permission to publish this account and to make free comment on operational procedures, for facilities for illustration, and for assistance from staff in its compilation.

American Letter

Renaissance predicted for Copper

New and increased markets for copper will result from aggressive and imaginative research, Dr. Clyde Williams, research director and president of Clyde Williams & Company, Columbus, Ohio, said at a recent meeting of the Copper and Brass Research Association at their meeting in Hot Springs, Virginia. He cited the increasing tempo of copper research both in the United States and abroad, the assurance of adequate supply, and the improved technical services that producers, fabricators, and foundries are providing their customers, as factors that will help the industry improve its markets. Dr. Williams, who was formerly president of the Battelle Memorial Institute, said that copper's "renaissance" should be rapid, inasmuch as research techniques in product development are now well known and highly evolved. He outlined the research programme that the Copper Products Development Association is instituting in laboratories in the United States and Europe, and noted that this programme will take advantage of technological skills that are already developed and of personnel who are experienced in finding new uses for basic materials.

Projects under consideration

The Copper Products Development Association is a research group organized earlier this year by major producers. Dr. Williams aided in the formation of this Association and his firm is guiding its research and development activities, its technical publications and promotion programme. He gave the following list of projects that the CPDA either plans to undertake or is already dealing with:

(1) Development of a stainless copper, possibly by metallurgical surface treatment.

(2) Development of organic and inorganic protective finishes for copper, brass, and bronze.

(3) Development of abrasion-resistant plastic finishes for copper products, and combinations of copper with the newer plastics and glasses to give materials of superior properties and great aesthetic appeal.

(4) Increased uses for copper in cast iron, and as an alloying element in steel.

(5) New copper-base alloys of unusual properties and utility.

(6) Combinations of copper and aluminium for electric-power applications.

(7) New uses for copper in construction, and in the transportation industries.

(8) The development of copper chemicals for use in industry and agriculture.

Equipment & Supplies

"Stitch" Repairs to Dies

Publicity emanating from the Metal Stitching Company, 165, Windmill Road, London, W.5, describes the application of "stitch" repairs to cracked die-casting dies at the London foundry of H. J. Maybrey & Company, Limited. The process consists basically in the insertion of shaped metal "stitches" to link holes (provided with connecting channels) drilled in the cast die on either side of the fracture. It is stated that a number of dies at Maybrey's have been repaired by the process, a particular example being a die which sustained a 10-in. crack running right through the thickness of the die and two-thirds of the distance across its surface. Stitches were inserted on the face of the die, and the repair subsequently ground to such a fineness that the efficiency of the die was unaffected. The report concludes by stating that this die has since produced 2,000 castings.

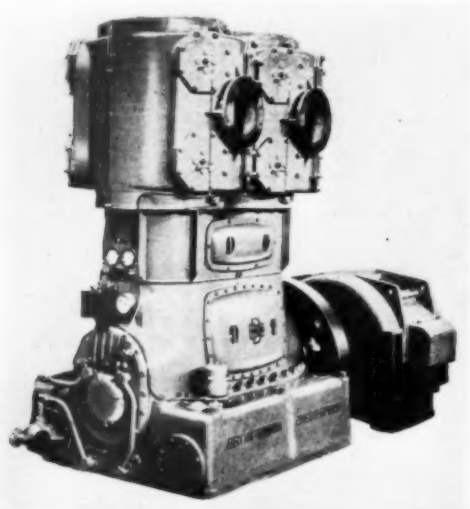
Reciprocating Compressors

A new standard range of vertical reciprocating compressors, designated type 300/A, is now being produced by Bryan Donkin Company, Limited, Chesterfield. It is claimed that rationalization of the design has enabled the operating efficiency of the compressors to be increased. The pressures now obtainable are as follow (lb. per sq. in. gauge):

stroke	*single-stage*	*two-stage*	*three-stage*
6 in.	50	250	1,200
8 in.	45	225	975
12 in.	40	200	750

The six-inch stroke compressor can be supplied as a single, two or three crank machine, and the eight-inch and 12-inch stroke machines are made with either two or three cranks (see Fig. 1). The maximum flow of free air obtainable with the 12-in. stroke compressor at a discharge pressure of 100 lb. per sq. in. gauge is about 3,600 cub. ft. per min.

FIG. 1—*Twelve-inch, two-crank vertical reciprocating compressor, introduced by Bryan Donkin Company, Limited, of Chesterfield.*



Easy Maintenance and Inspection

Special attention in design and production has been given to interchangeability of parts. The big end and main bearings are precision components, with thick wall steel backs and white-metal linings, and can be fitted easily without bedding-in or scraping. The compressors have been designed for continuous running, and there is little need for maintenance. Their structure is such, however, that they can very easily be dismantled and reassembled for examination and maintenance when required. The cylinder has the suction and delivery valves vertically disposed around the cylinder walls. By this means accessibility has been very much improved, and the removal of any valve gives direct access to the cylinder and piston for inspection.

Long Bearing Life

Long life of the bearings is made possible by the provision of a centrifugal oil cleaner, which is built in to the lubricating oil system and driven by oil pressure. This cleaner removes all particles larger than five microns, thus eliminating all the abrasive matter that is most detrimental to bearing surfaces. A water-cooled oil cooler has been incorporated in the base plate. The cylinder gland has been fitted with a seep-off pipe to the low-pressure side of the compressor, to prevent escape of toxic gases to atmosphere or ingress of air during the suction stroke. These compressors are also claimed to be completely dust- and weather-proof.

Paper-clip: Joseph Gillott & Sons, Limited of Dudley, Worcs, have—apparently very successfully—placed on the market a new type of paper-clip. It is made from ¾-in. wide steel strip and its 2-in. length is folded once. The ends of each limb are sheared off to give a blunt angle for the easy clipping together of sheets of paper. (From an editorial point of view, the JOURNAL'S staff report that the new clip shows a marked advantage over the usual wire type when attaching slips of paper to photographs, as the latter type so very often leave marks which are detrimental to the production of good printing blocks.)

Spray-gun Nozzle: A new low-mist air cap and fluid tip combination has been introduced by Aerograph-De-Vilbiss Company, Limited, 47, Holborn Viaduct, London, E.C.1. It is claimed that this unit, which is for use with the company's JGA spray-gun, allows good-class painting to be done with an almost complete absence of overspray. The new principles employed in the design of the nozzle ensure low-velocity air-flow, using normal air pressure of 30 lb. per. sq. in., and excellent atomization combined with freedom from paint rebound.

Spirit Dressing: Colloidal Graphite, Limited, Sheaf Island Works, Pond Hill, Sheffield 1, have developed a new spirit dressing for use with the CO_2 Process, the Susgra Moldgraph. This dressing fulfils all the requirements of a spirit blacking, being economical and convenient to use, with excellent covering and adhesive properties. It has a high refractory value, and is claimed to impart a glossy skin finish to both iron and non-ferrous castings.

Progress from . .

. . Ornament to Utility

Further Accounts of Midland Works to be visited during IBF Malvern Conference Week

(Continued from page 682)

In last week's issue of the JOURNAL a number of foundries and their ancillary departments which are to be visited by groups of members during IBF conference week (June 21 to 24) were described, and the series is continued below. The general heading was chosen to epitomize the trend in the area—over the years—from the decorative to utilitarian in the productions emanating from the region. Summaries are now printed of Dartmouth Auto Castings, Limited; Northern Aluminium Company, Limited, and British Piston Ring Company, Limited.

Dartmouth Auto Castings, Limited

Dartmouth Auto Castings, Limited (Darcast) was founded in 1933, primarily for the production of castings in high-duty irons for the automobile and allied industries (see Figs. 1 and 2). Since that time, the company has developed into one of the major suppliers of iron castings for the motor industry, and in the very wide range of castings produced has earned a reputation for high quality, coupled with large quantities. Further developments along these lines have enabled Darcast to be leaders in the industry and many innovations which were started there are now accepted practice in many mechanized foundries. Efficiency has been one of the keystones of success which leads to the company's claim that in Europe at least, and possibly even further afield, the output of tons per man/hour and per sq. ft. of floor area in a foundry of this type cannot be rivalled.

No. 1 Foundry

The company operates two foundries, known as No. 1 Foundry, Smethwick, and No. 2 Foundry, West Bromwich. At the former, a range of castings weighing from one or two lb. up to 150 lb. are produced on five separate moulding units, each of which is integrated with various service units. The moulding sections of this foundry vary considerably in the range of equipment used and include an automatic mould-making unit producing 110 complete moulds per hr. in boxes 42 by 24-in. wide, and a unit employing large jolt/squeeze machines which handle boxes of similar size, but at an increased rate of production.

Melting

The melting unit consists of hot-blast cupolas with a capacity to produce up to 30 tons per hr. of molten metal. Some 350 tons of synthetic sand per hr. is continuously processed to serve the moulding lines. At intervals throughout the day, continuous laboratory control upon the quality of metal and the sand is carried out and this is supervized from a well-equipped and modern laboratory.

Coremaking

The coreshop (which is adjacent to the moulding lines) produces a variety of cores by conventional methods as well as by the CO_2 Process and also in shell form. The planning of core production is such that very little stock is carried and in a num-

FIG. 1.—*Section of the dressing shop at Dartmouth Auto Castings, Limited. Note the convenient location of tote bins of unusual design on short lengths of roller conveyor adjacent to the operators, so that only a minimum of personal handling is necessary at the grinders or at the inspection benches.*

FIG. 2.—*At Dartmouth Auto Castings, Limited, the mould conveyors are arranged in a labyrinth to allow time for cooling.*

ber of instances, cores are produced to keep pace with current production.

There is a complete integration of all processes such as moulding, coremaking, cleaning and dressing, inspection and despatch throughout the foundry. The time required from the pouring of a casting to its arrival in the despatch stores can be as little as three hours, and frequently castings arrive at the point of despatch at a temperature so high as to render handling decidedly uncomfortable. Indeed, the wooden bases of lorries and pallets have, on occasion, been fired.

No. 2 Foundry

In the No. 2 Foundry at West Bromwich, the range of castings produced is wider and varies from a few lb. to crankcases and cylinder-blocks weighing some 300 lb. Here, there is only one moulding line with Sandslingers on turntables alongside large jolt/squeeze machines. As in the No. 1 Foundry, all the services are highly integrated, and the melting and sand units are similar.

A great diversity of cores are produced in this section and again, these are made by the conventional method, CO_2 Process and in shell form. This foundry also contains a spheroidal-graphite iron unit, currently producing crankshafts, both in shell and green-sand moulds.

The type of castings produced varies from motor-cycle brake drums through a range of motor-car brake drums and brake discs, up to commercial-vehicle brake discs on the one hand, and from bearing caps to cylinder blocks to which they are fitted on the other. Almost every other type of casting used in automobile engineering, such as flywheels, pressure plates, inlet and outlet exhaust manifolds, gearboxes, axle housings, pump bodies and so on, are made in high-duty irons to BS. 1452, grades 14 and 17, and the output, by weight, is approximately 1,500 tons per week.

Amenities

Both the foundries contain amenities blocks with provision for showers, storage of clothing and constant hot water. A continuously-manned first-aid post and surgery with a resident medical officer is also available, together with a mobile chest X-ray unit (used for the periodic examination of employees). An apprentice scheme is run in conjunction with Birmid Industries, Limited, as are the medical, welfare and sporting facilities.

Northern Aluminium Company, Limited

The foundry of the Northern Aluminium Company, Limited, at Handsworth, was originally built in 1926 by F. H. Adams, Limited, a half interest of which was owned by Northern Aluminium. Six years' later, Northern acquired full interest and wound-up F. H. Adams, and the plant was renamed Northern Aluminium Company, Limited, Birmingham Works. Originally producing sand- and gravity-die castings, the scope of the works was widened in 1936-37 by the addition of a forge. With the onset of world war II, plant and production were considerably modified to fully assist the war effort and at the peak of production, the figures of 400 tons or forgings and 150 tons of castings per month were attained. With the inevitable ebb of production following the war came the much-needed opportunity to re-site much of the plant into more logical juxta-positions which had hitherto been precluded by the urgency of war needs. More up-to-date equipment for the tool-room was installed and, by 1950, production figures were giving ample evidence of the increase in efficiency that these changes had brought about.

In addition to the foundry and forge, there is now within the Handsworth works a self-contained department concerned entirely with the manufacture of cable accessories in aluminium which are too numerous to list here, but which provide all necessary components for the installation of overhead electric-power lines.

Foundry

The foundry is exclusively concerned with gravity die-castings, sand-casting having been recently discontinued. Ideally situated in close proximity to many of the larger car factories, it is logical that the Birmingham works produces many cast-aluminium components for the motor industry.

Notable amongst these are alloy pistons and the present annual production is in the region of 3½-4 million piston castings. Alloys with high silicon content such as Noral 160 and 162 are widely used, as these possess the property of running very thin sections and in addition are corrosion-resistant.

Two oil-fired remelt furnaces each of 8,000-lb. capacity and seven crucible furnaces each holding 550 lb. supply the gravity die-casting foundry. The die tool-room is fully equipped to handle all requirements of both the foundry and the forge. There is a small coreshop which caters for the needs of both the die foundry and a small prototype sand foundry where development is carried out prior to quantity production being commenced in the gravity die-casting shop. Fettling and heat-treatment are ancillary services provided at Handsworth, through which castings pass prior to inspection and despatch.

Forge

The forge is equipped with free-drop hammers rated at 10, 20 and 30 cwt. and with power-drop pneumatic hammers exerting 2½, nine and 20 tons (Fig. 3). In addition, there are power presses operating at 1,000, 1,200 and 4,000 tons. Copper-bearing alloys (notably Noral 26S), are mainly used in the forge for such products as airframe components, connecting rods for the motor industry, etc. The forge has its own preheating furnaces in which the stock (mostly extruded bar from the Rogerstone and Banbury works of Northern Aluminium), is heated to temperatures ranging from 440 to 475 deg. C., according to the alloy in question. The largest pneumatic hammer is mainly engaged in forging air-screw blades which have been previously pre-forged in forging rolls. The forge has its own heat-treatment, etching and inspection departments. A further interesting department at Handsworth is the continuous rod-mill where molten aluminium is cast into a bar which is then led through an eight-stand mill to emerge at high speed, having been reduced to ⅜-in. diameter and wound on a rotating drum.

The personnel at Handsworth, comprising some 500 shop-floor workers and 140 office staff, are catered for in three canteens and there is a central cloakroom and ablution block incorporating showers. The shops are particularly well-ventilated by means of fresh air ducts leading into and extractor-fans leading out of the foundries and forge. The tool-room has a system of air-temperature control to give uniform conditions throughout the year.

British Piston Ring Company, Limited

The principal products of the British Piston Ring Company are pistons, piston-rings, gudgeon pins, cylinder liners, valve-seat inserts, valve guides, supplied chiefly to the automobile industry, but also to internal-combustion-engine builders and other branches of the engineering industry. A separate unit, situated at Warwick, makes drill bushes for general engineering purposes, and this section also supplies foundry equipment in the shape of moulding-box bushes.

FIG. 3.—*Forging aluminium air-screw blades with the 20-ton power-hammer (Northern Aluminium Company, Limited).*

The foundry, on which the visit will be centred, exists chiefly to provide castings for the finished products mentioned, although a considerable portion of the foundry output goes to outside customers. The business originated in 1909 under the late Mr. W. A. Oubridge, father of the present managing director; from small beginnings, it has now grown to a group employing 1,700 people, of which approximately 260 are foundry workers. The Jubilee was appropriately celebrated last year.

Foundry Products

The foundry buildings, which are approximately 40,000 sq. ft. in area, are situated on a separate site, one mile north of the main offices and machine-shops. The principal foundry products are cylinder-liner and piston-ring pot castings produced by the centrifugal process, and chilled-iron tappet and rocker castings, valve-guide castings, valve-seat insert castings, diesel-engine pre-combustion chambers, and cast-iron bar which are sand cast by various processes. These small specialized castings, mainly for the automobile and allied industries, are made in a wide range of alloyed and high-duty irons. Approximately two thirds of the castings produced are supplied to the company's machine-shops, and the remainder are despatched direct to customers.

FIG. 4.—*Mains-frequency electric melting furnace of 6 tons capacity and 1,100 kw. loading, at the works of British Piston Ring Company, Limited. The unit is shown together with the 10-ton heated receiver which it supplies with molten metal.*

The centrifugal-casting department is equipped with a large number of horizontal-axis casting machines which have been designed by the company's engineering department. Most of the centrifugal castings produced are less than 6-in. dia., and a typical length is 10 in. A number of abrasive-wheel cut-off machines are used for removing discard ends from the casting. Two incandescent gas-fired heat-treatment furnaces are installed for processing special irons of the high-chromium types, and also for the highest qualities of piston-ring pots. Adjacent to the heat-treatment furnaces is a small machine section which produces the majority of the dies used in the department.

Sand Foundry

The sand foundry is semi-mechanized and is equipped with a variety of moulding machines, including Sandslingers, semi-automatic jolt/squeeze machines and a solenoid-type electric squeeze machine for "stack" moulding. Coreblowing is extensively used, and many castings are produced by block-core and core-assembly methods. A particular feature is the casting of chill-face tappets where very close control of the depth of chill is essential. In most tappet moulds, a metal plate is used as a permanent drag-part. Dimensional requirements are very exact as many of the valve-guide and tappet castings are finished with only a small grinding allowance. This calls for highly accurate pattern and moulding-box equipment, and the closest possible control of the manufacturing operations. A small shell-moulding department is used for the production of long run orders for small components in alloyed irons, where the technique permits a reduction in machining costs.

Melting Equipment

The company has pioneered in the development of mains-frequency-type melting furnaces, and the principal metal unit now used is a mains-frequency electric furnace of 6-tons capacity (Fig. 4), rated at 1,100 kw. with a heated receiver of 10-tons capacity. Other melting equipment includes seven 28-in. cupolas, two 15-cwt. capacity direct-arc furnaces, three indirect-arc furnaces, each of 350-lb. capacity, and a 3-cwt. capacity high-frequency furnace. The specialized nature of the castings produced and the exacting metallurgical requirements necessitate close technical control of melting operations and a fully-trained metallurgical staff, backed by a well-equipped laboratory, is responsible for this function. Attention is paid to materials handling, and a widespread use is made of palletization, both in the foundry stores and for the movement and despatch of castings produced.

Washing facilities, canteen, showerbaths, apprentices-training section, and foundry offices are grouped together at the entrance to the sand foundry.

A considerable volume of the firm's products, including some raw castings, is exported directly, but there is, of course, a very much larger indirect export business in the way of components supplied for motor vehicles destined for sale overseas.

(To be continued)

Recent Wills

LOMAS-WALKER, SIR BERNARD, chairman of Cresswell's Asbestos Company, Limited, Bradford, and a director of a number of other companies £23,412

HYSLOP, R. M., director of Bayliss, Jones & Bayliss, Limited, makers of railway fastenings, upset and hammer forgings, etc., of Wolverhampton £33,218

GREEN, MAJOR G. H., chairman of Eliza Tinsley & Company, Limited, manufacturers of chains and builders' ironwork, of Old Hill (Staffs), and a past president of the Edge Tool Manufacturers' Association £119,463

IT IS REPORTED that Rubery Owen & Company, Limited, of Darlaston, Staffs, is planning to establish a factory in Scotland, possibly at a site in Motherwell, Lanarkshire. The firm which requires an 8-acre site for a new factory to produce chassis, back-axle casings, and petrol tanks, has already been in contact with the Town Council, and it is expected that the choice of site will be announced very soon. Initially about 300 would be employed and perhaps another 200 later on.

Joint Meeting of the Magnesium Association and the Magnesium Industry Council

Summary of Proceedings of the London Conference, May 23 to 27

Though the above was the official title of a conference held in London and elsewhere from May 23 to 27, it was in reality the first international conference covering magnesium ever to be held. There were visitors from France, Germany, Italy, Norway and Switzerland. The inaugural meeting was held at the Park Lane Hotel, London, on May 23, under the joint chairmanship of Mr. Otis Grant (president of the Magnesium Association) and Mr. E. Player, C.B.E. (chairman, Magnesium Industry Council). Mr. Player spoke first and offered a warm welcome to the members of the American Association and also to those visitors from overseas. He stressed that as an industry there were no secrets and that there had been an extraordinary amount of co-operation. Mr. Grant was quite short in his opening remarks and quickly called on Dr. J. D. Hanawalt (Dow Metal Products) to present to Major C. J. P. Ball, D.S.O., M.C., a plaque carrying a citation stressing the recipient's great contributions to the progress of the magnesium industry.

After thanking Dr. Hanawalt, Major Ball then presented the first paper, "History of Magnesium," which was a reprint of his presidential address to the Institute of Metals in 1956. During the course of his paper, Major Ball said that it gave him pleasure to recall the plant he inaugurated in the desert, near Las Vegas, Nevada, in 1941. Although this magnesium plant was no longer operating, the buildings and services were used for other metallurgical purposes, and Henderson—the town started by Basic Magnesium Inc.—was now the third largest city in the State of Nevada. Major Ball concluded his address by saying that examination of all the various known processes showed conclusively that low-cost production of magnesium was at present dependent upon the supply of low-cost power in conjunction with ample raw-materials. Constructors of aircraft and aero-engines would be users of magnesium alloys so long as these met their technical requirements, and the saving of weight remained as important an economic factor as it was to-day—when 1-lb. extra payload might be worth £30 or £60 according to the speed of the airliner. After more than 30 years' experience of magnesium, Major Ball said he remained more convinced than ever that as the inherent advantages of this lightest of metals became more widely known, the demand would rapidly increase, extraction and fabricating costs would be lowered, alloys would be further improved, and the future progress of magnesium would parallel or even improve upon that of aluminium.

After Major Ball had presented his paper, representatives from Canada, France, Germany, Norway and Switzerland each dealt with their national industries. From the foundry point of view, the most interesting address was given by Mr. W. H. O. Ziegler of the Knapsack-Griesheim company, of Germany. He said that the production of magnesium in Germany was 23,000 *tonnes* in 1959. The alloy used carried 0.001 per cent. of beryllium and no inhibitors were used. The Volkswagen concern daily made 50 *tonnes* of magnesium castings for their annual production of 4 million cars. The castings were used in both the engine and the transmission. The metal was melted in electric induction furnaces and the castings were made in pressure-die-casting machines. Mr. Ziegler insisted that the great benefit the Volkswagen concern derived from the use of magnesium castings was the lowered machining costs.

Banquet

On the Monday evening, in the Park Lane, Hotel, London, the Magnesium Industry Council gave a banquet in honour of the visit of the Magnesium Association of the USA. American delegates and their wives numbering 64, together with delegates from France (5), Germany (5), Norway (4), Sweden (4), Switzerland (3) Holland (1) and Italy (3), were entertained by the host organization, representing UK magnesium producers and users, making a grand total of about 172, including the ladies. Mr. E. Player, C.B.E., chairman of the Council (and managing director of Birmid Industries, Limited) received the company and took the chair at the banquet. It was he who after the loyal toast apologized for the absence, owing to illness, of Lord Tedder, who was to have been chief guest and suggested that a message wishing him a speedy recovery should be despatched. He then introduced Sir Reginald Verdon-Smith (chairman of the Bristol Aeroplane Company, Limited) who at short notice had "stepped into the breach" for proposing the toast of "The Magnesium Industry." The speaker was both witty and informative and the response—by Mr. C. A. Howe, president-elect of the Magnesium Association of America (president of the Hills McCanna Company)—was equally lighthearted and yet expressed full appreciation of his countrymen's reception in the UK. In fact, he disclosed that it was the magnesium industry of the UK which had taken the initiative in inviting the American contingent to hold their conference here. Before closing, Mr. Howe referred to the possibility in the future of a return visit being made to America by delegates from the European magnesium industry.

The toast of "Our Guests" was proposed by Mr. Player himself, saying that despite all the efforts made in pre- and post-war years, technical people on either side of the Atlantic still did not know each other well enough and the present meeting, which had taken on such a pleasant international aspect, was likely to prove a most useful step in improving relations between business people of the Western world. The response to this toast was made by Mr. Edward H. Perkins Jnr. (vice-president and general manager, Brooks & Perkins Incorporated, of the US). He was most emphatic in his gratitude to the UK committee who had organized the visit and loud in praise of the arrangements made

and the careful attention to detail which epitomized the whole programme.

Supporting the president at the top table was a representative array of both members and guests, including—in addition to the speakers named earlier—Mr. O. Grant, Mr. J. Thomson, Major C. J. P. Ball, Mr. S. G. Lind, Mr. G. A. Hunt, Mr. W. J. Rave, Mr. E. H. Perkins, Senr. Mr. J. Livingston, Mr. A. R. Mew, Mr. M. G. Gittins and Mr. J. Pitman, most of whom were accompanied by their ladies. During the proceedings at the Park Lane Hotel, there was exhibited in the foyer the handsome magnesium-metal plaque which had been presented earlier to Major Ball by the American visitors. This was plated and carried an etched portrait of the recipient, in addition to an inscription drawing attention to the outstanding contribution to the magnesium industry which was represented by his organizing this 1960 conference in the UK.

Following the conclusion of the official speeches, the remainder of the evening was devoted to informal conversations and renewal of acquaintances among the assembly.

Magnesium Foundry Practice

The session held on the Tuesday afternoon was devoted to foundry practice and the first paper to be presented was by Mr. R. W. Eade and Mr. B. W. Peck of J. Stone & Company (Charlton), Limited, under the title of "Magnesium Casting in the UK—Alloys and Production." Early in their remarks, they insisted that no new alloy should be released to industry until thorough casting trials on complex castings, searchingly examined by radiography, crack-detection and cut-up tests, had been conducted and had proved that the alloy had "castability." Then, and only then, should the material be sold on the market. It was suggested that a rest should be taken from the task of improving the physical and mechanical properties of new alloys and energies should be concentrated on improving the basic economics of producing goods. Four magnesium casting alloys were dealt with in the paper: (1) The magnesium/aluminium/zinc alloys in the as-cast, solution-treated or full heat-treated condition; (2) the high-strength magnesium/zirconium alloys with the major alloying element zinc, and new variants of this alloy range with smaller additions of either rare-earth metals or thorium; (3) the creep-resistant, magnesium/zirconium alloys with the major alloying element either rare-earth metals or thorium, and (4) a new range of alloys of magnesium/zirconium, with the addition of fractionated rare-earth metals, and the possible addition of silver. These new alloys were the result of recent work and possess a combination of high room temperature properties and good creep-resistance, which combine the qualities of the alloys in groups 2 and 3.

The authors dealt with each group separately and designated group 1 as being prone to the formation of layer-type micro-shrinkage, particularly in heavy sections. Fortunately, the development of the zirconium alloys had improved this position. Referring to group 2, the authors said that these alloys had disadvantages to the foundryman, they were hot short, could not be welded, and the production of castings free from any porosity was extremely difficult. These defects had been overcome by the development of two variants of the composition RZ 5 and TZ 6, RZ 5 having an addition of 1.0 to 1.75 per cent. rare-metals and TZ 6, an addition of 1.5 to 2.0 per cent. thorium. The TZ 6 was not recommended for castings with heavy section-thicknesses. Turning to group 3 alloys, the authors said that castings in both rare-earth metals and thorium-containing alloys with a full zirconium content had the great advantage of being completely free of microporosity. They were used for many pressure-tight applications where temperature considerations were not critical. The thorium- containing alloys were extremely "sluggish" and prone to oxide formation, so that production of thin-walled or complex castings in these alloys was a difficult problem for the foundryman, and close collaboration between designer and foundryman was even more necessary than usual. Group 4 alloys which includes MSR-A and MSR-B alloys, had good casting characteristics and sound pressure-tight castings could readily be made. Little trouble had so far been experienced with distortion of castings in heat-treatment or with dimensional instability, though it was to be expected that castings with a low inherent stiffness might well require special jigging in heat-treatment. If maximum properties were to be obtained, the time lag between withdrawal from the furnace and quenching must be at a minimum.

Commercial Applications

Commercial applications of magnesium castings in the UK were the subject of a paper given by Mr. J. H. D. Pitman, A.M.I.MECH.E., of Sterling Metals, Limited. He omitted aviation and military uses, but included automobile engineering, agricultural implements, textile machinery and general industrial uses which he subdivided into six sections. Dealing first with the automobile industry, he said that the Taxation Authorities in this country were helpful in assisting the introduction of magnesium into the heavy-vehicle industry in that, many years ago, tax was assessed on the unladen weight of the vehicle, so encouraging the designer favourably to consider the use of magnesium. Whilst these conditions of taxation did not apply to-day, the use of magnesium had been maintained. Then the author gave a representative selection of the types of castings being produced in magnesium for use on heavy vehicles.

A new development in the use of magnesium was the making of a cooling fan having 16 blades, tapering from 0.03 in. to 0.1 in., with an o.d. of 13 in. This fan which weighed 1¼ lb. was made by the Plaster process in L.121, and from initial-test reports it appeared that the lightness of the fan would result in less wear on the bearings and reduced wear also on the fan belt. In addition, the excellent surface-finish and accurate profile had considerably reduced machining costs. For the ordinary car trade, progress in the use of magnesium had been slow, as aluminium was well entrenched. However, some recent designs of cars

were calling for magnesium castings and these were used fairly extensively in racing cars.

In agriculture, one of the latest examples of the use of magnesium was the Rotaped half-track conversion unit for farm tractors. This unit consisted basically of a pair of special toothed-wheels each rolling inside a system of six magnesium link-track sections, which took the place of the normal tractor wheels. As the wheels turned, the articulated magnesium sections operated on the same principle as a caterpillar track. Each track-link weighed 30 lb. and was made as a gravity-die-casting, the castings being solution heat-treated. At the conclusion of the lecture, a film was shown of these "square"-wheeled tractors at work.

Other applications of magnesium described in the paper included textile-machinery components for such industries as Jacquards, tree-felling saws, portable machinery and hand tools, reciprocating bedplates for letterpress printing, office and domestic equipment, optical and photographic equipment, and confectionery trays for the food industry. The paper was unquestionably stimulating and brought about a good deal of re-thinking as to the possible applications for magnesium castings.

Concluding Programme

On Wednesday, delegates left London by coach for a sightseeing tour of Stratford-on-Avon and, in the evening, a visit was paid to a performance at the Shakespeare Memorial Theatre. On Thursday, there was a choice of two visits to Sterling Metals, Limited, or Birmetals, Limited. At the conclusion of these visits, the parties went by coach to Buxton where they spent the night. On Friday, delegates went by coach to Magnesium Elektron, Limited. Under the chairmanship of Major Ball and with Mr. J. Gris (*Societé Générale du Magnesium*).a technical session was held in the morning and two papers were presented. The first was entitled "Surface Treatments and Finishes for Magnesium," by J. S. Kirkpatrick (of Brooks & Perkins, Inc., USA) and the second was "Pellet Metallurgy" by Dr. R. S. Busk (of Dow Metal Products Company, Michigan, USA). In the afternoon, a tour was made of the works of Magnesium Elektron, Limited, and the Conference closed with a dinner at the Midland Hotel, Manchester.

Steel Pioneer's Memorial Site Controversy

Difference of opinion has arisen at Blaenavon (Mon) over the site of an obelisk memorial to Sidney Gilchrist Thomas, who pioneered the process of basic steel-making at the works of the old Blaenavon Iron & Steel Company. Newport and District Metallurgical Society, sponsor of the memorial fund, has been granted permission to erect the obelisk at the works of Daniel Doncaster & Sons, Limited, dropforgers, etc., whose premises now occupy the site of the old company.

But Blaenavon Council feels that this is too important a memorial to be tucked away inside the walls of a works on the outskirts of the town. The Society is to be asked to reconsider its decision on the site.

Law Cases

"Know-how" Income not Taxable

Judgment of some importance to manufacturing firms has been secured by Rolls-Royce, Limited, in the Chancery Division. Mr. Justice Pennycuick found that payments to the company by foreign governments or companies for "know-how" arose from the sale of a capital asset and are excluded from the computation of the company's profits.

He dismissed with costs four appeals by the Crown against decisions of the Special Commissioners allowing appeals by Rolls-Royce against assessments to income tax, excess profits tax, profits tax, and excess profits levy arising from the sale of technical knowledge. The appeals concerned assessments on the company's profits amounting to more than £15,000,000 for the years 1948 to 1955.

The judge said that with one or two exceptions Rolls-Royce did not turn its "know-how" to account until after 1945 except within its own manufacturing trade. Then between 1946 and 1953 the company entered into, with foreign governments and companies, a number of agreements, the basic provision of which was that, in consideration of a lump sum payment, the company would supply drawings and information to enable the other party to manufacture specified types of aero-engines.

The company had contended that it had never been its policy to make inventions and discover secret processes with a view to earning profits by realizing its rights in the inventions or processes. The vast store of knowledge and secret information was a fixed capital asset. The judge said he thought the transactions represented a disposition of part of the company's capital assets and it followed that any payment made in respect of it was not to be brought into account in computing revenue profits.

Protective Clothing—Appeal Succeeds

Protective clothing supplied by Nuffield Metal Products, Limited, Birmingham, was the subject of an appeal heard before Lord Justice Sellers in the Court of Appeal. Mr. Roy William Henry Wilson had been awarded £205 damages at Birmingham County Court for a wrist injury, the county court judge finding that the employers, knowing that protective armlets provided were not being worn by all workmen because the elastic was too tight, should have done something about it.

Lord Justice Sellers, allowing the company's appeal against the judgment, said that the company had spared no expense in providing protective clothing for its employees. He could find no negligence on its part. Mr. Wilson or any other workman could have adjusted the armlet to meet his particular requirements.

Nuffield Metal Products spent £30,000 a year in providing protective clothing. Workmen were issued with a fresh pair of gloves daily. Armlets were renewed weekly for 3,000 workers.

Agreeing, Lord Justice Willmer said the company issued a booklet to all employees in which they were advised to use the safety equipment provided. It had been said that workers should have been ordered to use the armlets. His Lordship thought such a course would have resulted in serious damage to labour relations.

GLACIER METAL COMPANY, LIMITED—Dividend for the year ended February 29, 1960, is 13 (11½) per cent. Net profits were £159,795 (£117,164), after tax of £98,699 (£95,300).

Iron Castings Output nears Record

Commenting on the Iron and Steel Board's figures for iron castings produced in the first quarter of 1960, the Joint Iron Council states that the total output in this period at 1,032,900 tons shows an increase of 4½ per cent. over production in the fourth quarter of 1959 (989,200 tons) and brings the level of production to within three-quarters of 1 per cent. of the industry's all-time quarterly record.

The JIC commentary points out that only in the building and domestic section is any reduction shown below the output of the previous quarter, and this reduction is marginal leaving the rate of production in the first quarter of this year still 11½ per cent. higher than in the corresponding quarter last year. All other sections bettered their previous quarter's production achievements in this period. The automobile section again improved on its past record of steeply rising output. The engineering section showed marked advance on the improved results of the previous quarter, with the machine-tool and textile-machinery castings featuring amongst widespread gains but some items, such as chemical and gas plant and boilers, prominent amongst the very few products where little improvement was recorded. Pressure pipes and fittings output was well maintained at the higher levels established in the second half of 1959. Ingot-mould production rose in sympathy with the sustained busier conditions operating in the steel industry. Output of the railway-equipment section, however, although it improved significantly still remained lower than a year ago.

TABLE 1.—*Output of Iron Castings, by Section.*

Section.	First quarter, 1960.		Percentage change.	
	1,000 tons.	Percentage of total.	Previous quarter.	First quarter, 1959.
Automobile (including tractors)	201.6	19.5	+4.5	+30.5
Engineering (*a*) ..	330.2	31.9	+6.5	+20.6
Building and domestic	150.8	14.6	−2.5	+11.5
Pressure pipes (*b*) and fittings	150.0	14.5	+0.7	+31.0
Ingot moulds (*c*) ..	135.8	13.1	+10.0	+61.7
Railway equipment ..	64.5	6.4	+9.3	− 2.4
Total	1,032.9	100.0	+4.4	+24.7

(*a*) Including machine-tool, textile machinery, electrical, shipbuilding, etc. (*b*) Mainly gas and water. (*c*) Mainly for the steel industry.

Labour

A total of 129,500 was employed in the ironfounding industry at the end of March, 1960, which is 2,000 more than three months ago and 6,000 more than at the end of March, 1959.

For details of the production of iron castings, including both grey and malleable iron, by the main sections of the industry, see Table 1, and Table 2 for production in the various districts.

TABLE 2.—*Production of Iron Castings, by District.*

District.	Iron castings (tons).	
	First quarter, 1959.	First quarter, 1960.
Eastern, South-Eastern (incl. London), Southern and South-Western	101,260	119,610
Midland	192,470	229,540
North Midland	167,390	223,060
East and West Ridings	80,420	94,830
North Western	79,290	97,810
Northern	79,310	110,560
Scotland and Northern Ireland	74,930	91,160
Wales	53,030	66,290
Total	828,100	1,032,860

Stuart Davis' Exhibition

Stuart Davis, Limited, of Much Park Street, Coventry, held an exhibition of their compressed-air equipment at the Queen's Hotel, Birmingham on May 25. Items shown included a range of the firm's "Red Ring" air valves of which the model P.814 is cam operated with spring return and designed for control of air-line pressure to double-acting cylinders and devices where a large capacity valve is required. Model P.813 is essentially similar but arranged for pilot-pressure return; model P.812 incorporates direct-pressure release and is for air lines where a complete assembly is required. The company manufactures a considerable number of types of air valves and offers a technical service on air-circuit problems. Some of the valves have been specially designed for conditions of the kind prevalent in foundries; models P 808 and P 908 for instance are of the direct-operated double-solenoid type for use in dusty conditions or where a heavy-duty valve is essential.

Stuart Davis also make various types of air-cylinders including the cushioned type (model 4711 C). They are available in both steel and copper and with chrome plated bores and piston rods. Cylinders and mountings are built to customers' requirements. A direct-operated single-solenoid model (P.807) has been designed for control of air-line pressure to double-acting cylinders where electrical remote control is required in dusty conditions. The maximum number of operations per minute is 100; the solenoid is continuously rated—and must be kept energized to maintain pressure from respective outlet—as it is spring returned.

GKN's Development Plans

Over the next four or five years a £20,000,000 steelworks development plan is to be undertaken by the Guest, Keen & Nettlefolds, Limited, group. A month ago it was announced that Guest, Keen Iron & Steel Company, Limited is to spend £6,750,000 to raise iron and steel production.

In his annual review, the chairman of the group, Mr. K. S. Peacock, states that to take care of the likely future demands by the group's engineering companies on its steelworks and to replace certain outside supplies, expansion of output at the steelworks is required on a long-term basis. The board had approved the proposals in principle and although expenditure would be spread over the next five years, it was expected that the heaviest amounts would fall in the years 1960, 1961, and 1962. Out of the total cost of the schemes only £2,225,000 was included in the total figure of £18,600,000 expenditure outstanding at January 2, 1960. During the year substantial spending is likely to be sanctioned for development at engineering works, much of it in relation to motor industry expansion and during the next three years capital expenditure is unlikely to fall below an annual rate of £18,000,000.

There is no indication by Mr. Peacock that GKN will need to raise new money and immediate prospects suggest that earnings should cover capital expenditure. Trading conditions are good, the outlook is promising, and almost all sections of the group are heavily occupied with substantial order-books.

BSCRA "Open House"

Foundry Extensions and Laboratories to be On View to Visitors, June 29 and 30

The British Steel Castings Research Association have arranged two Open Days (June 29 and 30, 9.30 a.m. to 5 p.m.) when their laboratories and experimental foundry will receive visits from delegates of member-firms and guests from within the foundry and kindred industries. Particular interest this year derives from the fact that considerable extensions have been made to the foundry section (see Fig. 1) and new plant has been installed. Invited also will be others interested in research generally and users of steel castings. Admission is by ticket only and readers interested in making use of the opportunity to visit the establishment on these Open Days should apply to the secretary of the Association (Mr. J. Bolton), at 5, East Bank Road, Sheffield, 2 ('phone Sheffield 28647). What follows is a summary of what is on view in the various departments and of special displays arranged:—

Displays and Demonstrations

Steelmaking: In this sphere, displays will include oxygen injection in steelmaking—for carbon and phosphorus removal; influence of oxygen injection on fume emission; the possibility of oxygen dilution, and metering and control techniques. Desulphurization (reverse-slag technique) and deoxidation practices, causes of pinholing, the use of the 56-lb. capacity vacuum melting-furnace and the 5-cwt. resistor-rod furnace will complete the show here.

Moulding Materials: Friability, erosion and scabbing of moulding mixes; metal penetration; the CO_2/sodium-silicate process and assessment of moulding materials (differential thermal analysis of clays—wet tensile-strength tester—deformation of moulding sands—high-temperature furnace) will all be on view, in addition to mould- and core-washes.

Foundry Processes: Three sub-sections under this heading which will be on view are: moulding-sand compaction (influence of sand grading and mechanical characteristics of moulding machines); sand reclamation (assessment of wet and dry systems—prototypes of new methods), and radio-isotope tracer-techniques in relation to exogenous inclusions in steel castings.

Plant Engineering: Under this head are: sampling

(*Continued on p. 734, col. 1*)

General view of the extended experimental foundry at the British Steel Castings Research Association, showing the general set-up of melting and moulding equipment.

Worshipful Company of Founders

Northumbria selected as Venue for this Year's Spring Tour

On May 2, members of the Worshipful Company of Founders set out for Newcastle-on-Tyne at the commencement of their annual "Spring Tour," which lasted from Tuesday to Thursday, May 3-5. The party was twenty strong and consisted of Mr. A. C. Jennings (Master), Mr. J. C. Thompson (Upper Warden), Mr. H. Wilson Wiley (Clerk), Rev. R. B. R. Walker, Mr. W. G. Fossick, Mr. G. W. Ilsley, Mr. F. Arnold Wilson, Mr. W. A. Hill, Mr. G. R. Tobitt, Mr. P. H. Swan, Mr. C. H. Kain, Mr. H. B. Young, Mr. A. K. Kirk, Mr. W. J. Pym, Mr. E. Ayres, Mr. J. Blakiston, Mr. D. E. Catton, Mr. F. Webster, and Mr. C. C. Booth. They travelled by train from London on the Monday afternoon and were met at Newcastle-on-Tyne by Sir William Scott, O.B.E., a member of the Founders Company, who had organized the arrangements in Northumbria.

First Day's Tour

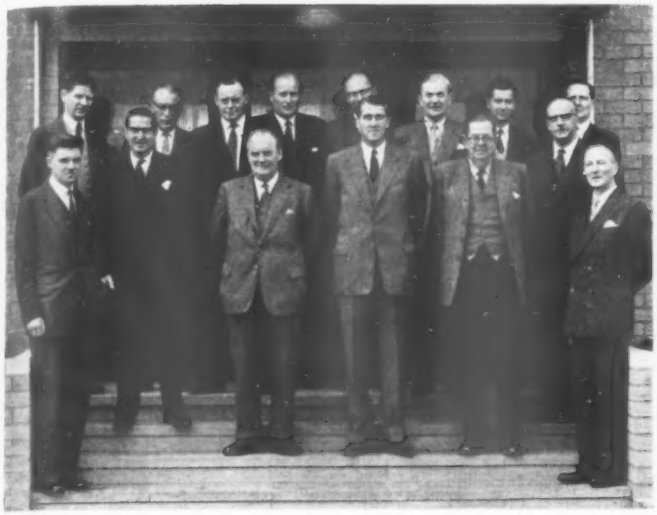
On Tuesday morning, the party was taken on a conducted tour of the naval yard of Vickers-Armstrongs at High Walker under the direction of Mr. F. D. Stickland, the commercial director. Here, the visitors were fortunate enough to see the SS Empress of Canada being prepared for her launching during the following week by Mrs. Diefenbaker (wife of the Canadian Prime Minister), and the whole launching procedure was explained to the visitors. The party also saw "on the stocks" a 65,000-ton oil-tanker—reported to be the biggest so far built in Britain. A tour was made of a new Holt Line ship which was almost ready for delivery and the members explored thoroughly the company's joiners' shop where 250 joiners—using many varieties of wood and modern substitutes of all kinds—make the cabins, staterooms, and most of the ships' furniture. After luncheon—provided by the company—the party went on a coach tour of the local countryside and Sir William presented each Liveryman with a book of photographs of the places of interest.

A visit was paid to Hardy Bros. (Alnwick), Limited, at Alnwick—amongst the most famous makers of fishing tackle in the world, employing some 250 men. It was interesting to learn that the firm were producing a light trout-rod, weighing only 2½ oz., for the USA market. After leaving Hardy Bros., the party visited Alnwick Castle, where His Grace, the Duke of Northumberland, had kindly consented to allow a private view of his home. Next followed a coach ride to Alnmouth, with its magnificent sands, and the party then returned to the White Swan Hotel for dinner as guests of Armstrong-Whitworth (Metal Industries), Limited, the host being Sir William Scott, a director of the company.

Second Day

On Wednesday, a visit was paid to the works of A. Reyrolle & Company, Limited, where approximately 8,000 staff are employed in the manufacture of electrical switchgear. The company has modern research

Group photographed during the "Spring Tour" of the Worshipful Company of Founders to the North-east Coast. The photograph of the party shows members at the works of Armstrong Whitworth (Metal Industries), Limited. In each case starting third from left, liverymen present are (top row) Mr. W. A. Hill, Mr. G. R. Tobitt, Mr. W. J. Pym and Mr. P. H. Swan; middle row: Mr. F. Arnold Wilson, Mr. F. Webster, Mr. E. Ayres, Mr. D. E. Catton, Mr. C. H. Kain, Mr. H. B. Young, Mr. G. W. Ilsley, Mr. H. Wilson Wiley (Clerk), a member of the host firm, and Mr. J. Blakiston; front row: Mr. J. C. Thompson (Upper Warden), Sir William Scott, Mr. A. C. Jennings (Master), Rev. R. B. R. Walker, Mr. C. C. Booth and Mr. A. K. Kirk. Staff of Armstrong Whitworth's who were present include Miss D. Murray, Mr. W. E. J. Adams, Mr. N. H. Baddeley, Mr. J. A. Ireland, Mr. R. H. Philip and Mr. F. W. Swan.



The above picture shows members of the Worshipful Company outside the new office building of Baker Perkins, Limited, at Bedewell and the smaller picture is of Sir William Scott (left) chatting to Mr. P. C. Culmer during the inspection of Baker Perkins's shotblast-plant section.

laboratories and probably the highest-powered electrical testing-station in this country. (A demonstration was given to the visitors of the testing of an insulator with 650,000 v.) The party also toured the plant which manufactures nuclear-power equipment. Luncheon was taken at the Royal Station Hotel as guests of Reyrolle's, Mr. E. N. Robinson, deputy chairman, being the host. In the afternoon, the works of Armstrong-Whitworth (Metal Industries), Limited and Jarrow Metal Industries, Limited, were visited, where the members were particularly impressed by the large machine-shops of the former and the size and weight of the steel castings produced by the latter.

After these visits, the party returned to Tynemouth for a dinner given at the Royal Station Hotel by the Worshipful Company of Founders to which representatives of the companies visited were invited. During the dinner, the Rev. R. B. R. Walker thanked the representatives of the works visited for their generous hospitality and for their co-operation in making the 1960 " Spring Tour " such a success.

Third Day

On Thursday, the day of departure for London, the party left their hotel to visit first the Bedewell Works of Baker Perkins, Limited. Mr. P. C. Culmer, the manager, welcomed the visitors and conducted them on a tour of the works. They were able to see food and laundry machinery being manufactured, and a demonstration was given of the company's shotblast plant and the Taccone moulding machine. Before leaving for the station, Baker Perkins gave their visitors a coffee-and-sherry party, and members then returned south by the 12.30 p.m. train.

Looking back on the tour, all those who participated agreed that this was one of the best—if not the best—of all the foundry tours which had been made and had been greatly enjoyed by the Liverymen who took part.

Department of Metallurgy at Oxford

Modern civilization is depending increasingly on metallurgy, said Mr. Isaac Wolfson (who had given an endowment of £65,000) when he opened the new £100,000 Department of Metallurgy at Oxford on May 31. " Many of the more spectacular advances in science depend on metallurgy," he said. " Interplanetary flight and aviation will demand more and more alloys which will withstand greater heat."

Mr. T. S. R. Boase, vice-chancellor of Oxford, said of the building that it formed the first part of the University's new science area, the Keble Triangle. The new department would work in close co-operation with the Ministry of Aviation and the Atomic Energy Research Establishment. Visitors inspecting the Department devoted considerable attention to the tungsten furnaces which can heat metals to temperatures up to 3,000 degrees C.

John Summers' Trading Profit Increase

Trading profit for the 26 weeks to April 2, 1960, of John Summers & Sons, Limited, steelmakers, of Shotton (Ches), was £7,150,000, compared with £6,900,000 for the first 27 weeks of 1958-59, and with £13,436,122 for the full 53 weeks ended October 3, 1959.

The company is maintaining its interim at 6 per cent., as forecast, on capital increased by a 50 per cent. scrip issue, representing an effective rise of 2 per cent.

Demand for sheets and light plates from a wide range of consuming industries continues to expand, states the interim report, and commitments for the rest of the financial year already absorb the full expected production of the Shotton works. Improved demand for heavy steel products is enabling the works to operate at a higher level this year.

BSCRA "Open House"

(*Continued from page* 731.)

techniques for dust and fumes in ducts; furnace-fume collection (assessment of pilot plant); shot-biasting (assessment of abrasives and life of plant) and dust control on fettling tools (BSCRA fettling benches incorporating noise- and dust-suppressing features—BSCRA exhaust system for grinding machines).

Physical Metallurgy: Here, interest will centre on short-cycle heat-treatment; interdendritic segregation; microporosity (the technique of semi-microradiography) and typical fractures of steel castings.

Properties of Steel Castings: These include: magnetic properties, Jominy hardness, Young's modulus, impact values at sub-zero temperatures and co-efficient of expansion.

Non-destructive Testing: Both ultrasonic examination technique and radiation monitoring will be on view.

Gases in Steel Laboratory: The determination of nitrogen in steel by the distillation method and of hydrogen by the diffusion method (600 deg. C.) are to be demonstrated.

Industrial Health: This section will show sampling and analysis of atmospheric dust (X-ray diffraction method for the determination of quartz content); noise-metering equipment and air-supplied respirators.

Library and Information Service and Publications: Displays will indicate the enquiry service available to members and users of steel castings.

Finally in the cinema, the BSCRA film "Let's Clear the Air" (which reviews the causes and some cures for air-borne dust in steel foundries) will be shown daily at 11.00 a.m. and 3.30 p.m. Refreshments will be served in the marquee at the following times: Coffee 10.30-11.30 a.m.; luncheon (tickets price 8s. 6d.) 12.30-2 p.m., and tea 2.30-4.30 p.m.

News in Brief

THE DISTILLERS COMPANY, LIMITED, chemical division, announce a reduction in the price of acetone as from May 30. Reductions range from £6 to £8 per ton dependent on quantity.

EAST SUSSEX ENGINEERING COMPANY, LIMITED, Phoenix Iron Works, Lewes, Sussex, have recently installed new plant which will enable them to undertake much heavier fabrications than has been possible in the past.

INDUSTRIAL PRODUCTS (REFRACTORIES), LIMITED, Warwick House, 9, Northumberland Road, Sheffield 10, announce that as from June 3, their offices will be transferred from Northumberland Road to 9, York Street, Sheffield 1.

RELIANCE FOUNDRY, NORWOOD, LIMITED, 37, Pomeroy Street, New Cross, London, S.E.14, announce that all correspondence for the Enterprise Aluminium Foundry should be sent, in future, to the Reliance Foundry at the above address.

TUBE INVESTMENTS, LIMITED, announces a £3,000,000 project for doubling the production of ball-bearing and other heavy-duty alloy-steel tubes of its subsidiary, Tubes, Limited, at Desford, near Leicester. The extensions are scheduled to be completed early in 1962.

MR. EDWARD HEATH, the Minister of Labour, made a 500-mile journey in less than a day in order to speak for 30 minutes to an industrial safety conference at Scarborough on May 27. After speaking he left before midnight to catch the early morning train back to London.

DYMET ALLOYS, LIMITED, tungsten-carbide manufacturers, have removed from Croydon to Frimley Road, Camberley, Surrey. Dymet is an associate company of Rockweld, Limited, arc-welding equipment manufacturers, who will also move to Camberley later this year.

EMPLOYEES of Holt Bros. (Halifax), Limited, engineers, millwrights and heat-treatment specialists, Hope Street, Halifax, have received cheques in celebration of the firm's centenary. The cheques were according to length of service, varying from over 30 years to a few months.

THE SYDNEY (NEW SOUTH WALES) FAIR is to be held from August 1 to 12, 1961. The Board of Trade and many other countries have booked space. Any firm interested in showing should write to Industries Fairs, Limited, Drury House, Russell Street, Drury Lane, London, W.C.2.

THE FACTORY PREMISES of Plessey, Limited, at Rotherham, which have been closed for several months after the transfer of personnel to Swindon, may be purchased by Jessop-Saville, Limited, Sheffield. It is understood that the production of crankshafts is planned there.

PORT, HARBOUR INSTALLATIONS, and a bauxite industry are to be created by the Aluminum Company of America in Jamaica's Clarendon Parish, at a cost of £5,360,000. The company has mining rights covering 30,000 acres, and construction is expected to start at the end of the year.

THE FOURTH ROBERT HORNE MEMORIAL LECTURE will be delivered by Professor F. D. Richardson, D.SC., PH.D., M.I.M.M. (professor of extraction metallurgy at the Imperial College of Science and Technology) on September 29, in Bristol. The title of Professor Richardson's lecture will be "Extraction of Metals and the Chemistry of Melts."

TO MEET the increasing demand for power-transmission equipment, Crofts (Engineers), Limited, Bradford 3, are opening a new stock-holding centre at 253-255, Great Lister Street, Birmingham, on July 4. The new building covers an area of 4,000 sq. ft. and comprises showroom, service counters and stores, garage and loading bays, administration offices and staff canteen.

PRODUCTION AT THE NEW truck, engines and tractor factory units at Bathgate, Glasgow, of the British Motor Corporation, Limited, is expected to begin in 18 months and full production to be achieved in the first half of 1962. The new factory, which will cost £11,250,000, will have an annual turnover of about £50,000,000 and will eventually employ up to 10,000.

TO MEET the changing techniques in the steel industry, the West Hunwick Silica & Firebrick Company, Limited, is to carry out a £250,000 expansion scheme at its Crook (Co. Durham) works. Mr. J. R. Steel, the chairman, said that after the expansion is completed next spring the works, which employs 150 men, would have a potential output of 500 tons of basic material a week.

EXTENSIONS, increasing total floor space by approximately 40 per cent., have recently been completed by Wolf Electric Tools, Limited, at their branch at Strath-

cona Street, Scotstoun, Glasgow, 3. A new block of modern design has been built in front of the existing premises, and the extensions mainly comprise new administrative offices, demonstration room, storage and despatch departments.

PLANS FOR TWO NEW FOUNDRIES have been approved in Ayr. The first is to be built by the Wallacetown Engineering Company, Limited, Viewfield Road, in addition to switchgear fabrication shops at Heathfield Road. Total cost of the shops and foundry is £10,000. James Dickie & Company (Drop Forgings), Limited, Victoria Stamping Works, Ayr, are to build a foundry in Seaforth Road, at a cost of £9,400.

A NEW LINE of "made in the Philippines" trucks and tractors is being introduced by International Harvester of the Philippines at its new Pasig Works, the inauguration of which was carried out by President Garcia on May 20. The multi-million-peso production plant on Shaw Boulevard in Pasig, Rizal, was built and equipped with a maximum of local materials, and without the necessity of asking for any dollar allocations.

HOLMAN BROTHERS, LIMITED, Camborne, Cornwall, has been selected by a group of American mining experts to receive a 1960 Blue Ribbon Mining Award for outstanding achievement in equipment development aiding the technological advancement of the mining industry. The award, which has been sponsored by the American publications *Mining World*/*World Mining*, is in respect of the Holman Rotair—the first British portable screw-type rotary compressor.

A NEW SHOP for the manufacture of oil-fired boilers has been built by Newton, Chambers & Company, Limited, on a site adjacent to the Redfyre Works within the company's main works area at Thorncliffe, near Sheffield. The new factory is a single-storey building 200 ft. by 50 ft., and except for the stores section, the entire floor space is used as a single open production unit. Although complete in itself, the new building is so designed that as further production capacity is required, extra bays can readily be added.

PROTECTION OF WORKERS against ionising radiations will be one of the questions to be considered at the 44th session of the International Labour Conference, which opened in Geneva on June 1 and which is expected to continue until June 23. A new convention and recommendation on this subject are likely to result. Another matter to be considered will be consultation and co-operation between public authorities and employers' and workers' organizations at the industrial and national levels, on which a recommendation is also likely to be adopted.

STEEL FRAMEWORK weighing 650-700 tons and worth over $1,000,000 has been manufactured by Octavius Atkinson & Sons, Limited, Starbeck, Harrogate (Yorks), for Malton Airport, Toronto. The framework, due to leave the Harrogate works, is the skeleton of an aircraft hangar and is made for the new company Skyport Limited, of Toronto. It will be the largest privately-owned hangar in Canada: 342 ft. wide by 270 ft. long. Erection at Malton is being undertaken by the company's Canadian agents, Atkinson Building, Limited, Harbour Commission Building, Toronto.

A FOUNDRY MACHINE costing £1,900 was flown into Birmingham from Rotterdam recently at a cost of several hundred pounds, to keep a delivery-date promise. A supply firm promised to import this shell-moulding machine and have it delivered to Charles Carr, Limited, by the last week in May. Owing to unexpected delays, delivery would have been over a fortnight late if it had been sent by normal transport, and so a plane was chartered for transporting it. The machine will now be in operation at Smethwick in time for the visit being paid by the Institute of British Foundrymen members during their annual conference.

PLANS FOR A BIG EXPANSION of the Australian steel industry have been announced by the general manager of Broken Hill Pty., Mr. McLennan (speaking at the 13th annual convention of the Australian Institute of Metals, in Wollongong, New South Wales). He said the expansion over the next decade would include a new structural steel mill at Whyalla, South Australia, costing £A11,000,000, and a new rod mill at Newcastle, New South Wales, at at cost of £A18,600,000. Broken Hill would install at both Whyalla, and Newcastle a recently-developed process of steel production known as the L.D. process, which uses oxygen and enables the faster production of steel. Mr. McLennan added that Broken Hill Pty. was also interested in plans by various scientific institutes connected with heavy industry to establish a centre in Melbourne.

AFTER THE MEETING of the Midland Regional Board for Industry in Birmingham last month, Mr. Stephen Burman, vice-chairman of the Board, said at a Press conference that the industrial boom in the area continues and shows no sign of flagging, and the labour shortage is getting worse. A report from the Ministry of Labour indicated that the number of outstanding vacancies in the region stands at about 42,000, the highest level since April, 1956. This report also stated that, with the sole exception of metal manufacturing, all major industries in the Midlands had shown increased demands for male and female labour. Mr. Burman concluded by saying that so far the restrictions announced by the Chancellor of the Exchequer seemed to have had no effect on demand, and delivery dates were having to be extended and supplies of raw materials were under considerable pressure.

FIRTH CLEVELAND, LIMITED, has acquired the whole of the issued share capital of J. J. Habershon & Sons, Limited, from the Iron & Steel Holding & Realization Agency for the sum of £700,000. Firth Cleveland is also to pay £400,000 for a loan to that amount owed by Habershons to ISHRA, which has now been assigned to Firth Cleveland, Limited. Of this sum of £400,000, Firth Cleveland has paid £100,000 now and is to pay the balance of £300,000 on or before September 30, 1961. Firth Cleveland is financing this transaction from its own resources. The board of J. J. Habershon & Sons, Limited, will now be: Mr. Charles W. Hayward, chairman; Mr. John W. Tonking, managing director of Firth Cleveland Steel Strip, Limited, deputy chairman; Mr. John W. Habershon and Mr. R. P. R. Habershon, joint managing directors; Mr. E. W. Day, sales director of Firth Cleveland Steel Strip, Limited, and Mr. A. E. Gilbert, Mr. T. D. Dunlop and Mr. S. R. Hague of the Habershon board.

Obituary

Mr. ROBERT PLOWRIGHT, deputy chairman of Plowright Bros., Limited, engineers, of Chesterfield, has died at the age of 75.

The death is announced of Mr. WILLIAM DUNBAR FERNS, of Fermac & Company, Limited, the Scottish agent of the Kestner Evaporator & Engineering Company, Limited. Mr. Ferns, who was 53 years of age, was educated at Glasgow High School, followed by the arts course at Glasgow University. His early engineering training was with the refrigeration engineers, L. Sterne & Company, Glasgow.

Personal

The Wolverhampton Metal Company, Limited, has appointed Mr. F. W. JAMES and Mr. K. R. H. JAMES as joint managing directors with Mr. A. M. ANDERSON.

Mr. R. W. THORNTON, B.SC., previously sales engineer of the company's industrial units division, has been appointed sales engineer of Leyland Motors, Limited, Lancs.

Mr. BRYAN WADE has joined the sales engineering staff of Midland Heating & Ventilation Company, Limited, and will operate from 20, Judith Drive, Evington, Leicester.

Mr. F. G. BLOCK has been appointed secretary of Brown Brothers, Limited, in place of Mr. T. C. COPPIN, who relinquished that post at the end of last month but remains on the board.

Mr. A. M. PORKESS has been appointed chief engineer of the National Gas & Oil Engine Company, Limited, Ashton-under-Lyne, a member of the Hawker Siddeley Group, Kingston-upon-Thames, Surrey.

The National Council for Technological Awards has conferred on Lord HIVES, the Council's first chairman and a former chairman of Rolls-Royce, Limited, an honorary diploma in technology (engineering).

YALE & TOWNE MANUFACTURING COMPANY, announce the appointment of Mr. R. W. HARRIS as works director of the company's British Lock & Hardware Division and E. Tonks & Sons, Limited, Willenhall, Staffordshire.

Mr. J. B. BIRD, managing director of Malleable Limited, Walsall, will be retiring on June 30,, after more than 45 years with the company. His services are being suitably recognized at a function to be held later in the year.

Mr. H. R. BRUNYEE at present works manager (services) at the Steel, Peech & Tozer branch of the United Steel Companies, is to retire on July 31. He will be succeeded by Mr. M. THOMAS, who is at present assistant works manager (services).

Sir WALTER WORBOYS, a deputy chairman of BTR Industries, Limited, has been elected chairman. He succeeds Sir GRAHAM HAYMAN who, owing to pressure of other business interests, has relinquished the chairmanship but remains on the board.

Mr. DOUGLAS CORY-WRIGHT has been elected chairman of the Chamber of Coal Traders in succession to Sir JOHN CHARRINGTON. Mr. Cory-Wright, who is 58, is deputy chairman of Wm. Cory & Son, Limited. He is also deputy chairman of the Industrial Coal Consumers' Council.

Mr. F. BASTOW has been appointed managing director of Dowty Seals, Limited, Mr. C. F. PORTER and Mr. K. G. WARE have been appointed to the board of Dowty Mining Equipment, Limited, and Mr. C. N. KING has been appointed to the board of Dowty Hydraulic Units, Limited.

Mrs. ANN BATE, who has been in the service of Precision Castings, Limited, Wolverhampton, for 25 years—the last 15 as forewoman over the coreshop—was the recipient of a gold wristlet-watch from the managing director, Mr. S. W. Ault, together with other gifts from the staff and workpeople.

Mr. W. LIONEL FRASER, who retired as chairman of Babcock & Wilcox, Limited, recently, has been appointed first president of the company. He had been chairman for nearly 10 years. Sir KENNETH HAGUE has been elected chairman and Sir REGINALD VERDON SMITH becomes deputy chairman.

Dr. J. H. MITCHELL, director of research of Ericsson Telephones, Limited, has been appointed to succeed Mr. G. D. CHRISTIE as chairman of Associated Transistors, Limited. Mr. Christie, who is a director of Automatic Telephone & Electric Company, Limited, remains a member of the board of Associated Transistors.

AMAFOND — *Associazione Nationale Fornitori Macchine e Materiali per Fonderia*—the Italian foundry equipment and supplies association—at its meeting in April elected Dr. Ing. GIOVANNI MUGNAI as president and Ing. REMO BERNOTTI as vice-president. The head office is located at the Palazzo Besana, 1 Belgiojoso, Milan.

Sheepbridge Equipment, Limited, of Chesterfield, a member company of the Sheepbridge Engineering group, announce the appointment of Mr. H. J. BALL, a former works manager in the group, as general manager. Mr. E. G. SCRANNAGE is appointed works manager. Mr. A. ELLIOTT takes over the position of chief buyer for the group.

Mr. E. ATHERTON has been seconded from the Cotton Board as the new regional controller of the Board of Trade for the East and West Ridings, in succession to Mr. D. A. WILSON, who has become controller of the Eastern Region. Mr. Atherton was formerly for five years with the commercial relations and export department of the Board of Trade, and mainly concerned with Latin America.

To mark the retirement of Mr. HENRY DEAR, commercial sales manager, Taskers of Andover (1932), Limited, held a dinner for him and about 25 of his colleagues at the Anton Arms. A token presentation was made to him—his actual gift being a greenhouse—by Mr. F. W. Knight, general sales manager. Mr. Dear joined the firm in 1905 as an apprentice and was appointed commercial sales manager in 1949.

Shell Chemical Company, Limited, announce that Mr. L. G. J. ENGLE, manager of their southern sales region, Villiers House, Strand, London, W.C.2, retired at the end of May. Mr. Engle originally joined the Shell group in 1922 and was engaged on the marketing and marine side of the company's business, before transferring to the chemical side in 1947. Mr. M. B. CREED, has been appointed regional manager as his successor.

Mr. W. J. HEYWOOD, chairman and managing director of S. H. Heywood & Company, Limited, has taken over the direction of the Reddish Crane Works (owing to the death of his cousin Mr. S. W. Heywood) in addition to the Manchester Electrical Contracting Works. The directors have appointed Mr. W. HOWE and Mr. A. L. HAWES, both of whom have been employed with the company for 60 years, to be general managers of the Manchester and Reddish works respectively.

The following grants for research work at Sheffield appear in the annual report of the Department of Scientific and Industrial Research:—Professor A. L. CULLEN, millimetre-wave probe techniques, £5,500 supplementary grant; Mr. T. B. FERGUSON, effect of volute and vaneless diffuser geometry blower performance, £2,000, one year from October 1, 1959; Professor DE GARS ALLEN, theoretical methods of designs of arch dams, £1,915, two years from October 1, 1960; Dr. T. R. KAISER, radio investigations of the upper atmosphere, £8,850, three years from October 1, 1959; Professor A. G. QUARRELL, transformations in steels, £36,000, three years from October 1, 1959; and Dr. R. S. TEBBLE, magnetic susceptibility of the transition elements, £1,940, supplementary grant.

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Pig-iron and Steel Production

Statistical Summary of March Returns

The following particulars of pig-iron and steel produced in Great Britain are from statistics issued by the British Iron and Steel Federation. Table 1 summarizes activities during recent months. Table 2 gives production of steel ingots and castings in March. Table 3, weekly average production of finished steel in February. Table 4 gives the production of pig-iron and ferro-alloys in March, and furnaces in blast. (All figures are weekly averages in thousands of tons).

TABLE 1.—*Iron and Steel Index and General Summary of Pig-iron and Steel Production.*

Period.	B.o.T. Price Index, 1938 = 100.			Iron-ore output.	Imported ore used.	Coke sent to blast-furnaces.	Pig-iron, ferro-alloys prod.	Scrap used in steel prod.	Steel (incl. alloy).			
	Iron and steel.	Coal.	Basic materials.[1]						Imports.[2]	Prod. ingots, castings.	Delivrs. finished steel.	Stocks.[3]
1957	328	488	537	325	303	270	275	220	14	417	322	2,580
1958	343	403	478	276	262	227	245	196	9	369	284	2,242
1959	340	497	477	286	244	210	242	208	7	388	291	2,244
1960—Feb. ..	358	503	486	333	320	256	302	250	15	482	375	2,267
Mch.[4]	337	502	484	347	325	262	312	256	19	485	375	2,236

TABLE 2.—*Average Weekly Production of Steel Ingots and Castings in March.*

District.	Open-hearth.		Bessemer.	Electric.	All other.	Total.		Total ingots and castings.
	Acid.	Basic.				Ingots	Castings.	
Derbys, Leics, Notts, Northants, and Essex ..	—	4.8	16.1 (basic)	2.8	0.1	22.3	1.5	23.8
Lancs. (excl. N.-W. Coast), Denbighs, Flints, and Cheshire	1.2	41.6	—	5.3	0.3	47.0	1.4	48.4
Yorkshire (excl. N.-E. Coast and Sheffield) ..								
Lincolnshire	—	50.2	—	—	0.1	50.2	0.1	50.3
North-East Coast	1.0	90.9	—	1.5	0.4	91.9	1.9	93.8
Scotland	1.2	48.7	—	4.0	0.1	51.8	2.2	54.0
Staffs, Shrops, Worcs, and Warwicks	—	23.2	—	4.6	0.8	26.6	2.0	28.6
South Wales and Monmouthshire	2.3	96.0	17.4 (basic)	0.9	0.1	116.2	0.5	116.7
Sheffield (incl. small quantity in Manchester) ..	8.1	39.2	—	15.1	0.4	60.7	2.1	62.8
North-West Coast	—	—	5.8 (acid)	0.9	—	6.6	0.1	6.7
Total	13.8	394.6	39.3	35.1	2.3	473.3	11.8	485.1[4]
February, 1960	14.1	392.1	39.5	34.3	2.2	470.4	11.8	482.2
March, 1959[4]	11.4	303.3	23.6	22.5	1.9	353.4	9.3	362.7

TABLE 3.—*Deliveries of New Non-alloy and Alloy Finished Steel*

Product.	1958.	1959.	1959.	1960.	
			Feb.	Jan.	Feb.
Non-alloy steel:					
Ingots, blooms, billets, and slabs[6]	4.6	5.1	4.3	5.6	5.3
Heavy rails ..	10.2	6.8	8.2	6.9	8.8
Sleepers	1.2	0.6	1.0	0.5	0.3
Fish and soleplates ..	0.7	0.4	0.5	0.4	0.6
Plates	47.3	43.1	35.4	49.2	53.7
Other heavy prod.	41.8	41.2	35.1	54.7	56.0
Ferro-concrete bars	7.6	9.6	6.6	12.1	13.4
Wire rods ..	21.5	23.5	22.3	29.4	28.9
Arches, etc. ..	8.6	7.8	8.6	7.7	8.5
Other light sections	29.1	33.0	30.4	42.0	44.5
Bright steel bars ..	6.2	7.6	7.0	9.7	10.4
Hot-rolled strip ..	22.6	27.4	27.2	34.9	36.2
Cold-rolled strip ..	7.0	8.0	7.7	10.0	10.6
Sheets, incl. coated	41.7	47.0	44.6	52.2	55.5
Tinplate	18.7	20.9	21.2	22.7	26.1
Blackplate	0.8	0.7	0.8	0.7	0.9
Tubes up to 16 in.	19.0	20.6	18.7	25.7	25.0
Tube fittings, etc. ..	0.4	0.4	0.4	0.4	0.4
Tyres, wheels, axles	4.5	2.4	2.9	2.7	2.2
Forgings (excl. drop)	2.6	2.1	2.2	2.1	2.2
Steel castings ..	4.2	3.6	3.7	4.2	4.5
Tool steel ..	0.2	0.2	0.2	0.3	0.2
Total	300.5	312.0	299.0	374.1	394.2
Alloy steel	16.1	18.2	17.3	23.0	23.8
Total deliveries from UK production[6]	316.6	330.2	316.3	397.1	418.0
Add: Imported finished steel ..	7.0	7.1	4.5	12.1	15.6
	323.6	337.3	320.8	409.2	433.6
Deduct: Intra-industry conversion[7] ..	41.2	47.6	45.9	57.1	60.1
Total new material ..	282.4	289.7	274.9	352.1	373.5

TABLE 4.—*Production of Pig-iron and Ferro-alloys*

District.	Furnaces in blast.	Hematite.	Basic.	Foundry.	Forge.	Ferro-alloys.	Total
Derbys., Leics., Notts., Northants, and Essex	21	—	29.7	21.7	0.1	—	51.5
Lancs. (excl. N.W. Coast), Denbigh, Flints. and Ches. ..	7	—	24.2	—	—	1.5	25.7
Yorkshire (excl. N.E. Coast and Sheffield) ..							
Lincolnshire ..	10	—	47.3	—	—	—	47.3
North-East Coast	17	2.0	62.3	—	—	1.0	65.3
Scotland	6	0.6	23.7	1.0	—	—	25.3
Staffs., Shrops., Worcs., and Warwicks. ..	5	—	6.0	1.1	—	—	7.1
S. Wales and Monmouthshire	11	3.8	60.5	—	—	—	64.3
Sheffield	2	—	3.5	—	—	—	3.5
North-West Coast	8	19.6	—	1.1	—	1.6	22.3
Total ..	87	26.0	257.2	24.9	0.1	4.1	312.3[8]
February, 1960 ..	83	21.7	249.0	28.7	—	2.1	301.5
March, 1959[4] ..	80	17.6	181.8	18.5	0.3	3.0	221.2

[1] Used in non-food manufacturing industries.
[2] Weekly average of calendar month.
[3] Stocks, mainly ingots and semi-finished, at the end of the year and months shown.
[4] Five weeks, all tables.
[5] Other than for conversion into any other form of finished steel listed.
[6] Includes finished steel produced in the UK from imported ingots and semi-finished steel.
[7] Material for conversion into other products also listed in this table.

Parliamentary

Castings for Machine-tools

The alleged shortage of castings for the machine-tool industry was the subject of a question put to the President of the Board of Trade by MR. STEPHEN SWINGLER, Labour MP for Newcastle-under-Lyme. Was the President aware, he asked, that the exports of the machine-tool industry were being jeopardized by a shortage of castings? What action was being taken to assist the industry to overcome it?

On being informed by MR. J. RODGERS, Parliamentary Secretary to the Board of Trade, that there was no evidence of any general shortage, MR. SWINGLER said: "Is not the Parliamentary Secretary aware that one of my constituents has sent him a mass of evidence from the FOUNDRY TRADE JOURNAL, and so on, showing that there is a shortage of castings and that many firms are complaining about how this is jeopardizing their export trade, as is the call-up of apprentices for National Service as soon as they have completed their training?"

MR. RODGERS replied that the Newcast Foundries, Limited, Silverdale (Staffs.), had sent four letters from four other companies complaining about delay. In the main these companies seemed to be connected with Newcast Foundries. From examination of the correspondence it did not appear to have been established that there was a general shortage of castings which was preventing the export of machine-tools. He could not accept the proposal that the shortage was due to the call-up of specially skilled men and added that if any machine-tool firm was finding difficulty in obtaining supplies of castings it would be well advised to discuss its problems with the Iron and Steel Board.

CO_2 Process applied to Mass Production

It is learned that the Springfield Steel Company, Limited, of Glasgow, has adopted the CO_2 Process for manufacturing steel castings for engineers' vices, and for various high-accuracy castings used in the oil industry and on rolling stock, with conspicuous success.

For a running line of cored castings, in B.S.S.592 grade A steel, of an intricate character having many machinable faces, bottom-pouring ladles were set up and the moulds passed beneath them on a conveyor belt. Two moulders made the top and bottom halves of the moulds and placed them on the belt which moved at 1.8 ft. per min. Certain difficulties arose during the experimental stages with the pouring of the steel but these were overcome, and now five men making moulds and pouring steel can easily turn out 40 castings per hr.

Consett Iron Trading Surplus

A final dividend of 5¼ per cent. is to be paid by the Consett Iron Company, Limited, makes 8¾ per cent. for the 53 weeks to April 2, 1960. A total of 4 per cent. was paid for the previous period of 26 weeks, against 8¾ per cent. for the year ended September 27, 1958.

The surplus of trading income over expenditure for 1959-60 was £4,039,224, against £1,359,413 for the six months. Depreciation takes £1,489,211 (£736,234) and the balance, before tax, is £1,997,158 (£529,761) after debenture and loan interest of £420,256 (£44,317).

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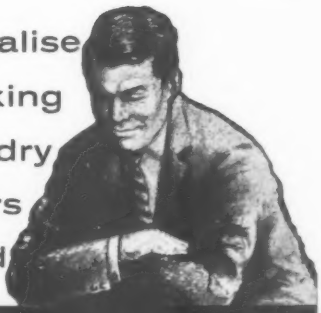

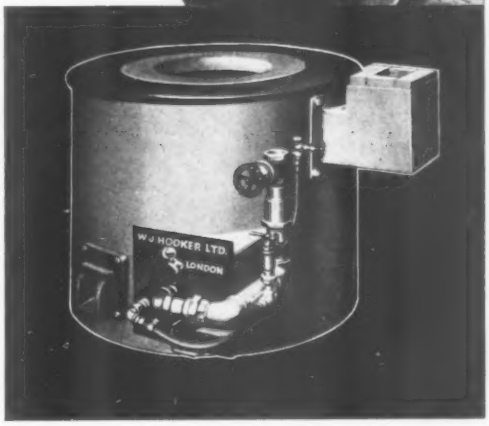

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Raw Material Markets

Iron and Steel

There is little change in the general run of business, the establishments engaged in the production of high-quality castings continuing, comparatively, to be the most heavily engaged. Most of the engineering and speciality foundries have sufficient work on hand to enable them to work at capacity levels. However, the necessary raw materials are available, but in many instances the shortage of suitable labour is a hindrance.

The motor vehicle industry continues to schedule for substantial quantities of castings and the foundries supplying them are very well employed. Foundries catering for the machine tool trade maintain their improvement in business and other foundries supplying castings for agricultural implement makers, the heavy engineering trade, power and electrical plant manufacturers, etc., are also well employed.

The pig-iron requirements of these foundries are mostly in the low phosphorus grades, although substantial quantities of hematite and, to a lesser extent, the refined irons, are also used by them. Apart from a limitation in the supply of certain brands of the low phosphorus irons, overall production of all grades of pig-iron are sufficient to cover present needs. The foundries have no difficulty in covering their requirements for both stock and consumption and there is very little forward buying.

In the case of high phosphorus pig-iron, production is more than adequate to cover the orders received from the light, jobbing, textile, and some of the engineering foundries which use this grade and producers are glad to dispose of surplus tonnages to overseas buyers when orders can be obtained. Many of the light foundries are reasonably employed on castings for the building and domestic utensil trades, but more work could be undertaken as productive capacity is not fully occupied. There are also some signs of a further decline in orders for castings for domestic equipment, due probably to the recently increased credit restrictions. The jobbing and textile foundries are in need of more work.

The foundries are able to get most of their scrap supplies without difficulty, the biggest demand being for the better and heavier grades of steel and cast-iron scrap. Foundry coke deliveries are at present satisfactory, and ganister, limestone, and firebricks are available on demand.

The re-rollers are well occupied with the orders on hand, and good demands continue for all their products. Small bars, light sections and reinforcing rods continue to be called for at substantial levels and only the scarcity of labour, and in some instances the shortage of steel semis, particularly the small sized 2-in. billets, hinders them from obtaining increased outputs.

Overall deliveries of steel semis from some home steelworks have continued to show improvement, and with the tonnages which are being imported, including supplies of 2-in. billets, the re-rollers should be better off for supplies.

All arisings at the steelworks of suitable re-rolling defectives and crops are readily accepted.

Non-ferrous Metals

The London copper market eased following the settlement of the strike situation in Chile and the expressed views that there may be a surplus of copper in the latter half of this year. However, before the holiday, Mr. Harry Oppenheimer, chairman of the Anglo American Corporation of South Africa, Limited, said that if there was a surplus of copper in the coming months, the leading copper producers would take appropriate action to reduce production to realistic levels. This evidence that the supply/demand situation would not be allowed to get out of hand caused the market to firm up and prices recovered much of the previous week's losses.

Consumer interest in front of the holidays was weak and prices in London drifted. This tendency is still in evidence as consumers now feel that prices will go lower rather than higher in the months ahead. The outlook is still clouded by the situation in the Belgian Congo.

In the US custom smelters continue to experience quiet trading conditions, although producers report satisfactory demand. Offerings of scrap (on the basis of 24 cents a pound for No. 2 wire) are fairly heavy and it could be that the custom smelters will soon lower their price. Before any decision is made, however, June business will be assessed. The price of 33 cents a pound is still applicable to both custom smelters and producers.

Tin came to life last week and prices recovered much of their previous losses. The US market has improved considerably and the price is not far below $1.01 cents a pound. The improved demand situation in the US has been due to purchasing metal from Malaya rather than from the Texas smelter which was being fed on ore from Indonesia. Last week, however, the Indonesian Government decided to send all its tin to be smelted in Malaya rather than sending it to the Texas smelter. For some months now the US market has been out of line with other markets, but this should now be rectified.

Zinc continues to be an irregular market in London. Prices have, however, held steady due to the absence of sellers. In the US the market is quiet and the price unchanged at 13 cents a pound.

Lead in London has lost some of its buoyancy due to availability of foreign metal, but demand remains satisfactory. In the US the market is firm and stocks have dropped below 100,000 tons for the first time in two years. Meanwhile the strikes at the Broken Hill Company and at the American Smelting and Refining Company's properties at Wallace, Idaho, continue. The US price is unaltered at 12 cents a pound.

Steel Firm Recruitment will cramp College

Further recruitment of young people by Samuel Fox & Company, Limited, of Sheffield, will mean that Stocksbridge College of Further Education must either expand or cut its programme before next September. This was stated at a recent meeting of the West Riding of Yorkshire Education Committee.

The Policy and Finance Sub-committee reported that most of the students already there were employees of the firm, which had just announced a further £4,500,000 development scheme, and was planning to recruit more young people from Stocksbridge and district. A number of additional courses had been planned, but the influx was expected to be so great that the present building would be too small.

The county education officer, Mr. A. B. Clegg, suggested that a maximum of £20,000 should be allocated for this need. This would enable two classrooms to be provided at a cost of £3,750 and make an initial instalment of £16,250 for the current financial year for the new college which was contemplated. These suggestions were confirmed.

Baker Perkins Machinery at work . . . . . *at Peter Brotherhood Ltd.*

Peter Brotherhood Ltd. use this 'Cadet' Rotary Table Shot Blast Machine for a wide range of application at a high production rate. Note especially the control desk which includes signal lights, 24 volt current socket for inspection and ammeters indicating the shot output of the impeller. The wiring circuit is arranged for automatic operation to cut out human errors.

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HISTORICAL NOTE

Peter Brotherhood Ltd. were established in London in 1868. In 1907, the works was transferred to Peterborough, Northants. In their Foundry, they produce a wide range of general engineering castings for air and gas compressors, steam turbines, steam engines, refrigeration plant, water turbines, chemical filtration plants, textile machinery, brewery machinery, and many other applications

Current Prices of Iron, Steel, and Non-ferrous Metals

(Delivered unless otherwise stated)

June 8, 1960

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2, 10-ton lots or over: Middlesbrough, £21 6s. 0d.; Birmingham, £20 18s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.40 per cent. P, 10-ton lots or over, £23 5s. 0d., delivered Birmingham, £23 10s. 0d., delivered Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 6s. 6d.; South Zone, £25 9s. 0d.

Refined Malleable.—P, 0.10 per cent. max.; North Zone, £26 6s. 6d.; South Zone, £26 9s. 0d.

Hematite.—Si up to 2 per cent., S. & P. over 0.03 to 0.05 per cent., 10-ton lots or over: N.-E. of England (local iron), £23 19s. 0d.; Scotland (Scotch iron), Zone S.1, £24 5s. 6d.; Sheffield, £25 7s. 6d.; Birmingham, £25 14s. 0d.; Wales (Welsh iron), £23 19s. 0d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leicestershire in 10-ton lots or over.

FERRO-ALLOYS

(Per ton unless otherwise stated, delivered)

Ferro-silicon (6-ton lots and over).—45 per cent. Si, £41 10s. 0d. to £44 0s. 0d., scale 15s. 0d. per unit, lumpy; 75 per cent. Si, £57 0s. 0d. to £62 10s. 0d., scale 15s. 0d. per unit, lumpy.

Ferro-vanadium.—50/60 per cent., 20s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s. 10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 12s. 1d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 15s. 1d. per lb. of W.

Ferro-chrome (6-ton lots and over, lumpy).—4/6 per cent. C, £78 10s. 0d. to £82 10s. 0d., basis 60 per cent. Cr. scale 26s. 0d. to 28s. 6d. per unit; over 6 per cent. C, £77 0s. 0d. to £80 10s. 0d., basis 60 per cent. Cr, scale, 26s. 0d. to 28s. 6d. per unit; 2 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 1 per cent, C,* 1s. 8½d. to 1s. 11½d. per lb. Cr; 0.15 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.10 per cent C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.06 per cent. C,* 1s. 10½d. to 2s. 1d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £275 0s. 0d.; 9 6/98 per cent., £285 0s. 0d.

Ferro-columbium.—65/67 per cent., Cb + Ta, 19s. 9d. per lb., Cb + Ta.

Ferro-manganese (Standard).—78 per cent., £61 10s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: soft u.t., 100 tons & over, £31 15s. 6d.; tested, 0.08 to 0.33 per cent. C, 6 to 35 tons, £33 15s. 6d.; hard (0.41 to 0.60 per cent. C), under 10 tons, £34 17s. 0d.; silico-manganese, under 10 tons, £43 16s. 6d.; free-cutting, under 10 tons, £36 14s. 6d. SIEMENS MARTIN ACID (under 10 tons): Up to 0.25 per cent. C, £41 1s. 0d.; silico-manganese, £44 4s. 0d.

Billets, Blooms, and Slabs for Forging and for Stamping (under 10 tons).—Basic, soft, up to 0.33 per cent. C, £38 10s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C, £39 12s. 6d.; acid, up to 0.25 per cent. C, £43 4s. 0d.

* Average 68-70 per cent.

FINISHED STEEL

Heavy Plates and Sections (1 ton to 10 tons).—Ship plates (N.-E. Coast), £41 12s. 0d.; boiler plates (N.-E. Coast), £44 2s. 0d.; floor plates (N.-E. Coast), £43 10s. 0d.; angles (N.-E. Coast), £38 16s. 6d.; joists (N.-E. Coast), £38 12s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £39 1s. 0d.; under 10 tons to 4 tons, £40 18s. 0d.; under 4 tons to 2 tons, £41 3s. 0d.; hoop and strip, coils, 100 tons and over, £38 0s. 0d.; uncoated strip mill coils, hot rolled, under 3 mm. to 12g., 25 tons to under 50 tons, £43 16s. 0d.; black sheets (hand mill), 24g., 10 tons and over. £57 14s. 6d.; galvanized corrugated sheets, 24g., 10 tons and over, £68 5s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £67 17s. 0d.; nickel-chrome, £98 11s. 0d.; nickel-chrome-molybdenum £111 4s. 0d., in lots of 5 tons to under 10 tons.

NON-FERROUS METALS

Copper.—Cash, £244 15s. 0d. to £245 0s. 0d.; three months, £240 10s. 0d. to £240 15s. 0d.; settlement, £245 0s. 0d.

Copper, Tubes, etc.—Solid-drawn tubes, 2s. 4¾d. per lb.; rods, 261s. 6d. per cwt. basis; 20 s.w.g., 296s. 6d. per cwt.

Tin.—Cash, £785 0s. 0d. to £785 10s. 0d.; three months, £785 0s. 0d. to £785 10s. 0d.; settlement, £785 10s. 0d.

Lead (Refined Pig).—First half June, £73 10s. 0d. to £73 12s. 6d.; first half September, £74 7s. 6d. to £74 10s. 0d.

Zinc.—First half June, £89 15s. 0d. to £90 0s. 0d.; first half September, £89 15s. 0d. to £89 17s. 6d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £126 17s. 6d.; rolled zinc (boiler plates), all English destinations, £124 12s. 6d.; zinc oxide (Red Seal), d/d buyers' premises, £105 0s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 11⅞d. per lb.; sheets to 10 w.g., 211s. 6d. per cwt.; wire, 2s. 9d.; rolled metal, 211s. 6d. per cwt.

Brass (Brazing).—BS1400, B3, £171; B6, £223.

Brass (High Tensile).—BS1400, HTB1, £199; HTB2, £221; HTB3, £235.

Gunmetal.—BS1400, LG2, £214; LG3, £223; G1, ½%, £277; G1, 1%, £264.

Phosphor Bronze.—BS1400, PB1 (AID released), £311; BS1400, 90/10/1, £289.

Leaded Phosphor Bronze.—BS1400, LPB1, £235.

Phosphor Bronze Strip, etc.—Strip, 298s. 6d. per cwt.; wire, 4s. 2d. per lb.; rods, 3s. 4¾d.; tubes, 3s. 4¾d.; chill cast bars, solids 3s. 4¾d.; cored 3s. 5¾d. (CHARLES CLIFFORD, LIMITED).

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 11½d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 4¼d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 4d. All prices are net.

Other Metals.—Magnesium, ingots 2s. 2½d. to 2s. 3d. per lb., Antimony, English, 99 per cent., £190 0s. 0d. Quicksilver: ex-warehouse, £70 0s. 0d. to £71 10s. 0d. Nickel, £600 0s. 0d. Aluminium ingots, £186 0s. 0d.; aluminium bronze (BS1400), AB1, £259, AB2, £266.

Company News

Simon Group Merger

Full details of the proposed merger of Henry Simon (Holdings), Limited, and Simon-Carves, Limited, the engineering companies, have been sent to shareholders. The merger will produce a new large group, Simon Engineering, Limited, with a share capital of nearly £5,000,000 and assets of about £18,000,000. Shareholders in the two existing companies will be offered shares in Simon Engineering, plus £2,750,000 in cash. All the capital of both Simon-Carves and Henry Simon will be owned by Simon Engineering, thus eliminating each company's holding in the other and releasing surplus cash.

Every public holder of one Henry Simon 5s. ordinary will receive 1½ new shares in Simon Engineering plus 5s. cash. Since Simon Engineering will pay a 26⅔ per cent. dividend, Henry Simon's dividend is thus raised from 35 per cent. to 40 per cent. For public holders of Simon-Carves, the offer is one and a half new shares for every 5s. ordinary with 5s. cash and one 6 per cent. cumulative preference for every 15 shares. This recognizes Simon-Carves's greater contribution to the new group's assets.

The proportion of combined net assets attributable to Simon-Carves is about 53.4 per cent. and on the basis of earnings over the past three years, the share of profits is in the region of 52.5 per cent., and the scheme gives Simon-Carves shareholders a 52.3 per cent. stake in the equity of Simon Engineering.

Initially the board of Simon Engineering will comprise: Mr. R. B. Potter, as chairman, and nine directors (each of whom is a director of either Henry Simon or Simon-Carves): Mr. D. T. Barritt, Mr. H. Clarke, Mr. I. Hey, Mr. N. Hinton, Mr. E. G. Liebert, Mr. C. G. H. Simon, Mr. G. H. Sugden, Mr. C. H. Wooll, and Mr. J. P. V. Woollam.

HAWKER SIDDELEY GROUP, LIMITED—Following an increase in the original holding of 47 per cent. to 100 per cent., Switchgear & Engineering Corporation of South Africa (Pty.), Limited, is now a wholly-owned subsidiary.

LANCASHIRE STEEL CORPORATION, LIMITED—Interim dividend is raised by the equivalent of 1 per cent. to 3½ per cent. in respect of the year ending October 1, 1960. The 1958-59 total was equal to 8½ per cent. on the present capital as doubled by a scrip issue.

ROTARY HOES, LIMITED—Final dividend of 7½ per cent. on capital increased by a one-for-one scrip issue and a subsequent one-for-nine rights issue, makes 12½ per cent. (5 per cent. equivalent) for 1959. Group net profits rose to £210,127 from £169,865, after tax of £217,774 (£127,292).

W. WILLIAMS & SONS (HOLDINGS), LIMITED, makers of sand-gravity-pressure castings—The chairman, Mr. H. H. Williams, states that work in the bronze foundry has improved and it is hoped to erect a new foundry in Cardiff soon to cope with increasing demands for quality castings. Additional foundry bays are being built at Pontyclun and a well-equipped machine shop opened during the year at the Colchester factory estate. Net profit for the year ended December 27, 1959, was £47,431 (£50,157). A final dividend of 8 per cent. is recommended. No final was declared for 1958, but a special interim of 7 per cent. was paid.

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Advertisements (accompanied by a remittance) and replies to Box Numbers should be addressed to the Advertisement Manager, Foundry Trade Journal, John Adam House 17/19, John Adam Street, Adelphi, London, W.C.2. If received by first post Monday advertisements can normally be accommodated in the following Thursday's issue.

SITUATIONS WANTED

ENGINEER, 40. Good background and experience in modern Mechanised Foundries, seeks position as Works or Chief Engineer, M.I.E.C., A.M.I.B.F., etc. Accustomed to full control. Malleable, steel. Box EF635, FOUNDRY TRADE JOURNAL.

FOUNDRYMAN (40), M.I.B.F., nine years' managerial experience all aspects ferrous and non-ferrous production, mechanised, jobbing. At present employed Ceylon. Free August, 1960. Seeks position with reputable company. Anything considered. Could represent foundry plant, or allied concern such as refractories, etc. S.E. Asia or elsewhere. All replies to be addressed to Box FO618, FOUNDRY TRADE JOURNAL.

ENTHUSIASTIC YOUNG FOUNDRYMAN, highly qualified in foundry technology and metallurgy, seeks position with a well established foundry producing malleable or s.g. iron castings. Position envisaged, is one where a full and thorough knowledge of modern malleable founding can be used to its fullest exent, and where drive and initiative will be appreciated by remuneration. Box EY672, FOUNDRY TRADE JOURNAL.

FOUNDRY MANAGER (40), M.I.B.F., seeks position. Ten years' managerial experience. General jobbing and semi-mechanised production up to 15 tons. CO_2 process, technically trained, sound disciplinarian. Box FM674, FOUNDRY TRADE JOURNAL.

PRACTICAL FOUNDRYMAN, 39, C. & G., M.I.B.F., experienced grey iron, mechanite and non-ferrous production, mechanized and jobbing, seeks position Assistant Manager/Manager, medium foundry home or overseas. Fourteen years' supervisory and managerial experience reputable companies U.K., S.E. Asia. Box PF670, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

PATTERN INSPECTOR. First class Pattern Checker required, must be familiar with first class Wood and Metal Patterns coupled with knowledge of Modern Foundry Technique. Full details to: THE UNIVERSAL PATTERN & PRECISION ENGINEERING CO. LTD., Kelvin Way, Crawley, Sussex.

WANTED. Skilled ALUMINIUM or BRONZE MOULDER. Permanent position for man with ability. Wide range of bench and floor work. Modern foundry, situated in Leicestershire. Good rates of pay or piece work. Housing assistance arranged for suitable applicant. Box WS665, FOUNDRY TRADE JOURNAL.

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FOUNDRY FOREMAN required for Ferrous Mechanised Foundry in the West Riding of Yorkshire. Applicants should have had experience of modern method of production on semi and mechanical lines, and be able to control and train semi-skilled labour. In reply, please state experience, qualifications and salary required. Box FF671, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*contd.*

METALLURGICAL CHEMIST urgently required to take charge of Laboratory of West Midland Grey Ironfoundry. Please write giving full details of experience, age and salary required to Box MC667, FOUNDRY TRADE JOURNAL.

FOUNDRY MANAGER.—Applications are invited from experienced men for the position of Foundry Manager. Experience of Hand Moulding, Mechanical Systems for Heavy and Light Machine Moulding for batch production, Core Making, Pattern Making, Sand Control. Must have experience of Foundry Cost Systems and Profit Control. Man of strong personality between 35 and 45 years. Apply Box FM673, FOUNDRY TRADE JOURNAL.

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AS a result of re-organising the Sales function in our Foundry Division, we invite applicants for the position of SALES OFFICE MANAGER, with direct responsibility to the Sales Director. Our Foundry Division is engaged in the manufacture of Quality Controlled Steel Castings and is one of the leaders in this field. Applicants should have a good general education and some experience of sales office administration and costing with sound knowledge of direct selling to the Engineering Industry. Some general production knowledge would be considered an advantage, as also would experience in the Foundry Industry. Preferred age between 28 and 35. A four-figure salary is offered together with progressive conditions of employment. Applications, giving a general outline of the candidate's personal history, experience and achievements, will be treated in strict confidence and should be addressed to the PERSONNEL DIRECTOR, K & L STEELFOUNDERS AND ENGINEERS LIMITED, Letchworth, Herts. *(One of the 600 Group of Companies.)*

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Letters of application giving full personal details and stating present salary should be addressed in confidence to the Assistant Secretary, CIBA (A.R.L.), LIMITED, Duxford, Cambridge.

SITUATIONS VACANT—*contd.*

A VACANCY exists for YOUNG TECHNICIAN in the Process Control and Development Section of an Investment Foundry. Previous experience in this field of metallurgical engineering is not essential. Apply, giving full details of education, previous experience, etc., to P. I. CASTINGS (ALTRINCHAM) LTD., Atlantic Street, Altrincham.

FOUNDRY SUPERINTENDENT required for small expanding iron-foundry in West Bromwich producing high-grade medium castings in sand and shell moulding process. Full experience essential. State age, experience and salary expected to Box FS675, FOUNDRY TRADE JOURNAL.

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METALLURGIST.—Foundry Metallurgist required Wolverhampton area, 21/30 years of age. State previous experience and salary required to Box ME674, FOUNDRY TRADE JOURNAL.

METALLURGIST required for Roll Foundry in Midlands. Manufacturing Grain, Alloy Grain, Chill, Indefinite Chill and Steel Base Rolls. Box MR661, FOUNDRY TRADE JOURNAL.

CROFTS (ENGINEERS), LIMITED, Empire Works, Thornbury, Bradford, 3, Yorkshire, have vacancy for ASSISTANT STEEL FOUNDRY MANAGER (age 30 to 40 preferred) for Foundry with a weekly capacity of 100 tons machine moulded and jobbing castings (Basic Electric) maximum weight 10 tons. Successful applicant must be capable of assuming full control of Steel Foundry in due course and must, therefore, have the necessary technical qualifications and management experience in steel founding. Write stating age, experience and present position to COMPANY SECRETARY.

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A WELL KNOWN Iron Foundry operating in the Midlands area is about to make the above appointment. Applications are invited for this post from men with good experience of all aspects of cylinder block production. Applicants must already have held a supervisory position connected with moulding and assembly of motor cylinders and should be not less than 30 years of age. This staff post is superannuated and could be progressive. All applications will be treated in strictest confidence. Box CB675, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*contd.*

SEVERAL experienced REPRESENTATIVES required for Foundry Plant and Machinery. To operate in Midlands, Home Counties and West Country. Salary, commission and expenses. Box SE671, FOUNDRY TRADE JOURNAL.

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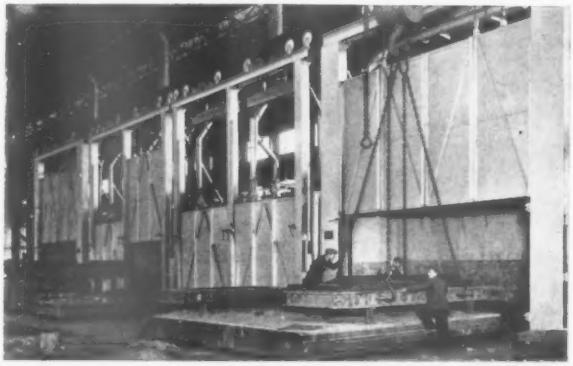

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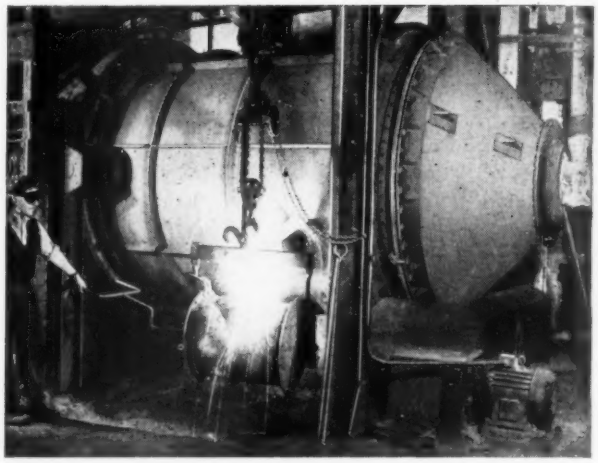

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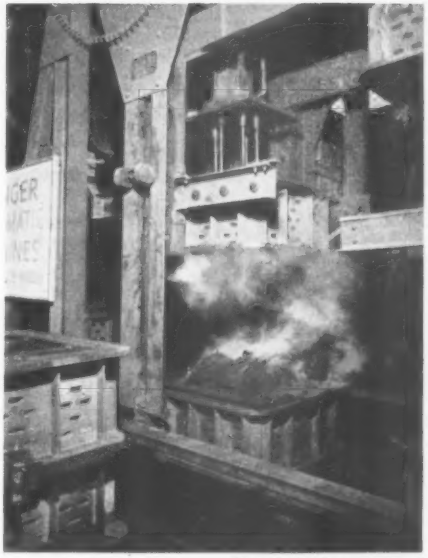

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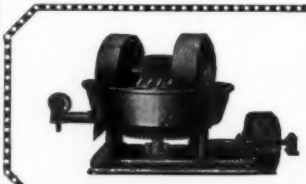

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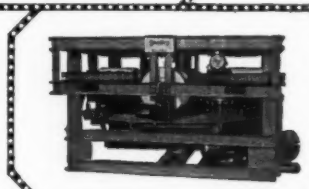

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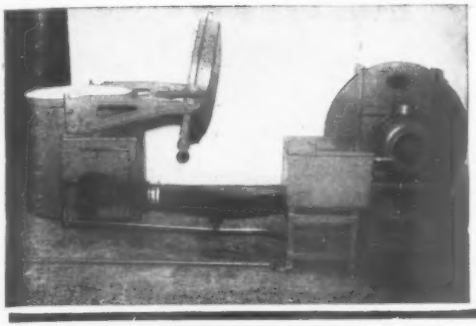

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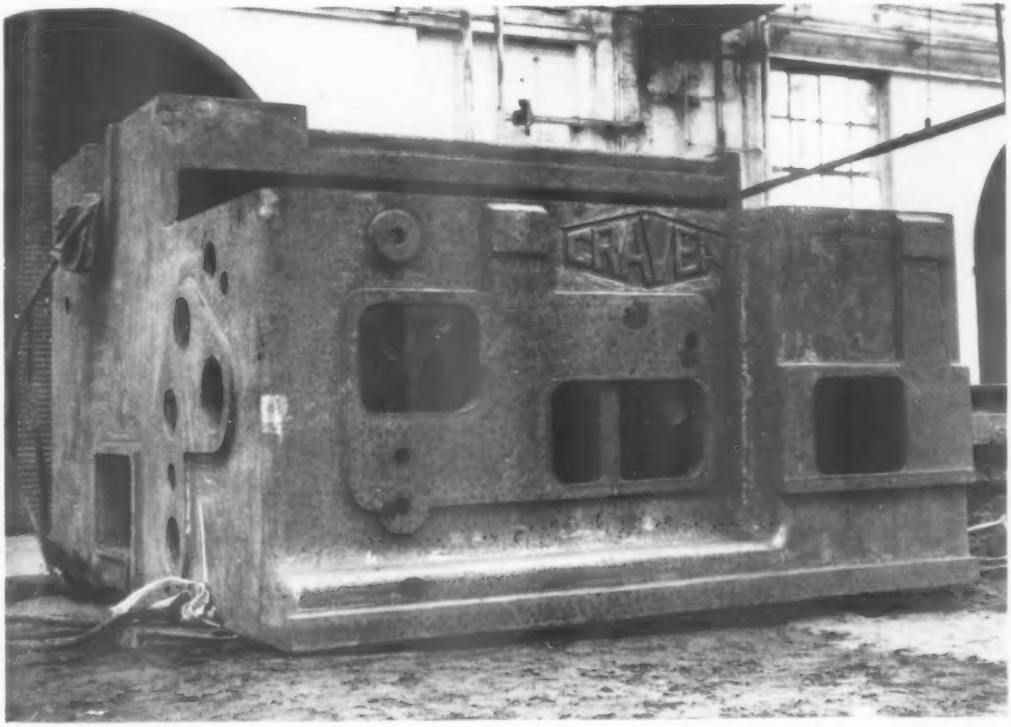

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